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DTIC STUDY

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D PART II

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Technical Reports 4-6

(see Part I for reports 1-3)

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DEPARTMENT OF THE ARMY  
UNITED STATES MILITARY ACADEMY  
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12 May 1983

REPLY TO  
ATTENTION OF

Science Research Laboratory

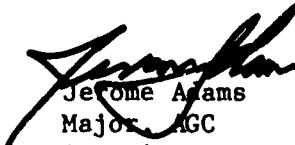
Mr. Harry Schrecengost  
Defense Logistics Agency  
Defense Technical Information Center  
Cameron Station  
Alexandria, Virginia 22314

Dear Mr. Schrecengost:

I have enclosed a copy of six technical reports which have been the results of research sponsored by the U. S. Army Research Institute. The programs were conducted at the United States Military Academy at West Point. The themes relate to leadership, sex-roles, and gender.

Please catalog these documents in your center for public use. There are no restrictions on the use of these data — that is, the information is unclassified and cleared through public affairs for release. I am available at autovon 688-2624 if you have any questions.

Sincerely,



Jerome Adams  
Major AGC  
Associate Research Professor

Enclosures

The 1979 Leadership Study:

Technical Report #4 "Follower Attitudes Toward Women  
in the Military as a Moderator of Reactions to  
Male and Female Leaders"

Technical Report #5 "Performance of Male and Female Cadets  
During Cadet Field Training"

Technical Report #6 "Critical Incidents of Good and  
Bad Leadership During Cadet Basic  
Training"

ABSTRACT

This document contains three technical reports about perceptions of followers who describe leader performance in mixed gender units. This study is part of Project Athena which studies the integration of women into the Corps of Cadets.

- The first technical report "Follower Attitudes Toward Women" describes a longitudinal assessment to determine if cadet attitudes toward women in the military introduced any bias to follower judgments about leader success and the causes of success. Discussion of the results focuses on factors reducing gender-based bias at USMA.
- The second report "Performance of Male and Female Cadets at CFT" examines a comparison of all female cadets (Class of '82) and a random sample of male cadets in terms of the performance ratings they received at CFT. Results found that male cadets were rated more favorably than female cadets, and regular Army officers (TAC) rated all cadets less favorably than did upper class cadets. Possible directions for changing the rating form are proposed.
- The third report "Critical Incidents of Good and Bad Leadership at CBT" describes a content analysis of several situational and leader behavior categories both typifying and discriminating between good and bad leadership. Results in this setting support the notion of setting specific leadership typologies.



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The 1979 Summer Leadership Study:  
Procedures and Descriptive Analyses  
for the Basic Questionnaire

Technical Report 80-1

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\*The research reported here was supported by grant MDA 903-78-G02 from the Army Research Institute for Social and Behavioral Sciences (Jerome Adams, Principal Investigator).

We thank the staff of the Office of Institutional Research, U.S. Military Academy, for their assistance in collecting and coding the data reported here. Robert F. Priest and Paul Hirth were especially helpful in this regard. We also acknowledge the assistance of Michael Frone in preparing the data for analysis.

The 1979 Summer Leadership Study:  
Procedures and Descriptive Analyses  
for the Basic Questionnaire

"Project Athena" is a longitudinal, multi-faceted program of research designed to assess the impact of admitting women to the Corps of Cadets at the United States Military Academy. The specific activities of this research program have been described in three annual reports (Vitters & Kinzer, 1977; Vitters, 1978; Adams, 1979). As part of this ongoing research project, a survey was conducted in the summer of 1979. The purpose of this survey was to collect information concerning cadet reactions to this training, with special emphasis on reactions to those cadets and officers occupying leadership roles in the training units. A 69-item questionnaire was the basic data collection instrument for this study; the questionnaire was comprised of 5 questions providing identification information and 64 questions of substantive interests. Appendix A provides complete copies of the questionnaires used for each of the four cadet classes participating in this research.

The present report is devoted exclusively to describing the procedures of the summer survey and the empirical properties of the questionnaires used in this survey. Subsequent reports will consider the several substantive issues to be addressed with the data provided by the questionnaire.

METHOD

Subjects

The subjects in this study were cadets at the U.S. Military Academy from each of the four classes enrolled in the summer of 1979. The number of male

and female cadets from each class providing complete or partially complete responses to the questionnaire are presented in Table 1.

Table 1

Number of Cadets with Complete or Partially Complete Questionnaires

<u>Class Year</u>	<u>Males</u>	<u>Females</u>	<u>Total</u>
1980	388	26	414
1981	629	49	678
1982	767	75	842
1983	692	86	810*
	—	—	
	Total = 2476	Total = 236	

Setting

The questionnaire used in this study assessed cadet reactions to three different summer training experiences.

Cadet Basic Training (CBT). CBT is a six-and one half week training course in basic military skills for new cadets. Cadets in the Class of 1983 were the trainees in this setting. Cadets in the Class of 1980 and 1981 were members of the administrative leadership cadre responsible, in part, for training the new cadets. The leadership cadre is divided into two three-week details, each with a different set of upper class cadets serving in the leadership roles.

Cadet Field Training (CFT). CFT is a seven week course intended to introduce the combat arms to cadets during the summer following their first year at the Academy. Cadets in the Class of 1982 were the trainees in this setting.

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\*Thirty-two cadets in the Class of 1983 did not indicate their gender on the questionnaire. For this reason, the total does not equal the number of males plus the number of females.

Cadets in the Class of 1980 and 1981 were members of the administrative training detail responsible for the coordination of cadets as they moved through the course of this program. As was the case with CBT, there were two training details for the administrative leadership roles at CFT.

Cadet Troop Leadership Training (CTLT). CTLT involves assignment of a cadet to a regular Army unit for approximately one month during the course of the summer following the second or third year at the Academy. The cadets serve as a "third lieutenant"\*\* in the company to which they are assigned. Cadets from the Classes of 1980 and 1981 participated in this experience during the period of our study.

Table 2 reports the number of male and female cadets in the Classes of 1980 and 1981 assigned to each of these three leadership experiences. Classes of 1982 and 1983 are not included in this table since all cadets in these classes were trainees in CFT or CBT, respectively; none of the cadets in Classes of 1983 or 1982 held administrative leadership roles.\*\*

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\* Under existing law (10 USC 3075(b) (2)) cadets are members of the Regular Army. Their military rank is above that of enlisted personnel, but their rank is below that of commissioned or warrant officers (PARA 1-7, AR 600-20). With some minor exceptions, they are entitled to the legal rights of officers of the Army as distinguished from non-commissioned officers. Cadets may, in connection with their duties, issue orders to subordinates.

\*\* Members of the Classes of 1980 and 1981 are assigned to leadership positions for a four week duration. They are responsible for the administrative running of the training. Members of the Class of 1982 who experience training at Camp Buckner are assigned to temporary leadership roles. The time duration usually lasts 2½ hours.

Table 2\*

Number of Male and Female Cadets in Each Leadership Role

	CBT Leadership Cadre		CFT Leadership Cadre		CTLT	
	<u>M</u>	<u>F</u>	<u>M</u>	<u>F</u>	<u>M</u>	<u>F</u>
Class of 1980	181	13	93	4	77	8
Class of 1981	26	7	49	9	546	33

Design

The study called for cadets to describe their leader and their reactions to summer training experiences. As the summer provided different experiences for each class, the target of questionnaire responses was necessarily different for each class.

Class of 1983. These cadets were instructed to consider their experience at CBT and their squad leader (a cadet from the Classes of 1980 or 1981) when responding to the questionnaire. One half of these cadets were told to consider only their experience during the first training detail when completing the questionnaire; one half were told to base their responses solely on their experience and leader for the second training detail.

Class of 1982. These cadets were instructed to consider their experiences at CFT and their own leadership experiences and those of their administrative platoon leader (a cadet from the Class of 1980 or 1981) when responding to the questionnaire. One half of the cadets were told to base their responses solely on their experience during the first training detail and one half were told to base their responses solely on their experience and leader for the second training detail.

\*The number of cadets shown in this table does not match the total number listed in Table 1 because some cadets did not answer the question which identified their summer assignment.

Class of 1981. Cadets in this class were involved in one of three summer training activities; the leadership cadre at CBT, CFT or a CTLT assignment. Cadets indicated which of these experiences in which they participated. Then they were asked to describe themselves in the leadership role.

Class of 1980. Cadets in this class were involved in one of three training activities; the administrative detail leadership cadre at CBT, CFT or a CTLT assignment. Cadets indicated on the questionnaire the summer experience in which they participated. They then described the leader immediately superior to them in the cadet chain of command at CBT, CFT, or in the case of CTLT, the regular Army officer to whom they reported.

#### Data Collection Procedures

Cadets in the Classes of 1980, 1981 and 1982 responded to the questionnaire during reorganization week in August 1979. The research instrument was included as part of a longer questionnaire prepared and administered by the Office of Institutional Research, United States Military Academy. However, 69 of the 100 questions asked in the questionnaire relate to this study. Other items included non-related areas (e.g., availability of library hours, book store selections, etc.).

For cadets in the Class of 1983, the questionnaire was distributed in October 1979 through the regular chain of command operating in the Corps of Cadets. Completed questionnaires were collected by cadets and returned to the Director of Project Athena.

#### Response Rates

Response rates for the questionnaire were 44% for Class of 1980, 66% for Class of 1981, 71% for Class of 1982 and 67% for Class of 1983. These rates

calculated by dividing the number of usable questionnaires by the number of cadets in each class at the time of data collection. Incomplete, incorrect and uncodable questionnaires, as well as refusals to cooperate, are included as "no response". Also, some cadets may not have received questionnaires when they were administered through the cadet chain of command or at the re-organization week questionnaire session. Thus, the response rates reported here are clearly on the conservative side. There is no systematic bias of results as a result of missing cases.

One response rate figure requires special mention. Cadets in the Class of 1980 who were in the second leadership detail for CBT were not available at the time the questionnaire was administered ( $N = 264$ ).

#### THE QUESTIONNAIRE

The questionnaire was composed of 69 questions; five questions (#1-4 and #55) provided identifying information and the remaining 64 items were directed at substantive issues. The remainder of this section of the report is devoted to describing the content of these questions. Brief descriptions of the instructions and response alternatives are reported here when such information is necessary to understand the measurement process. Verbatim reproduction of all instructions, response alternatives and question wording are available in Appendix A (which contains complete questionnaires).

To avoid the problem of response set, many of the questions were stated in negative terms. For such items, agreement or reports of frequent activity of this type would reflect a negative evaluation. All such items have been recoded so that high scores reflect positive actions. The recode statements in the documentation section of the computer printouts reproduced as Tables 4-11

should be consulted if there are questions about scoring procedures.. All recode instructions are listed there.

#### MULTI-ITEM SCALES

More than one question was used to measure 10 of the variables of concern in this study. For these variables, the several questions with similar content were combined into scales created by simply summing the scores for each item. Below we list the questions comprising each scale and briefly describe the concept we hope to measure with these questions. In parentheses is the SPSS variable name created for the computer file containing these data.

##### Scale Descriptions

1. Leader Effectiveness (ZLEFFCT). The perceived effectiveness of the unit leader was assessed with three items. Because the mean and variability of item #6 was considerably greater than the other two questions, it was necessary to standardize each score ( $\bar{X} = 0.00$ ,  $SD = 1.00$ ) before adding them into a scale score. These questions had from 3 to 7 response alternatives and each question was scored so that high scores reflected positive evaluations of the leader.

5. How effective was your unit leader in carrying out the duties of his/her leadership role?

6. Relative to what you would expect from a U.S.M.A. cadet in his/her class, how would you rate your unit leader in terms of leadership performance?

7. Overall, how much respect do you have for the leadership abilities of your unit leader?

2. Unit Effectiveness (ZUEFFCT). The perceived effectiveness of unit performance was assessed with two items. Because the mean and variability of

item #9 was considerably greater than the other question, it was necessary to standardize each score ( $\bar{X} = 0.00$ ,  $SD = 1.00$ ) before adding them into a scale score. These questions had from 3 to 7 response alternatives and each question was scored so that high scores reflected positive evaluations of the unit.

8. How effective was your unit in performing the tasks assigned to it?

9. Relative to other units performing similar tasks, how would you rate your unit in terms of task accomplishment?

3. Downward Communication Content (CCONTENT). The perceived effectiveness of downward communication, from leader to subordinate, was assessed with five items. These five items were chosen to match five content areas identified by Katz and Kahn (1978) as the essential types of information subordinates receive from their leader. For each content area, the respondent indicated the effectiveness of the leader's communication on a three point scale. Items were all scored so that high scores indicated effective communication.

10. Specific duties expected of me.

11. How well I performed my duties.

12. The objectives my unit were trying to achieve.

13. The rules for performing duties relevant to my unit.

14. The reasons behind these rules.

4. Downward Communication Quality (CQUALITY). The general perceived quality of downward communication was assessed with four items. These four items attempted to reflect the major dimensions one could use to evaluate the effectiveness of a communication (accuracy, timeliness, amount and adequacy of the information provided). These items were responded to with a five point

agree/disagree scale. All items were scored so that high scores indicated positive evaluation of communication.

15. The information I received from my unit leader was often inaccurate.

16. Generally, my unit leader provided me with the right amount of information.

17. The information I received from my unit leader was often too late to act upon effectively.

18. My unit leader generally provided the information needed to accomplish our mission successfully.

5. Upward Communication (CUPWARD). The perceived receptivity of leaders to upward communication attempts, from subordinate to leader, was assessed with three items. These three items were chosen to match the major functions of upward communication identified by Katz and Kahn (1978); i.e., sharing problems, asking questions and making suggestions. These items were presented in a five point agree-disagree format and the items were scored so that high scores indicate effective upward communication.

19. I felt that I could talk with my unit leader about any difficulties or problems I might have in performing my duties.

20. I felt free to offer suggestions/recommendations to my unit leader about how to perform my duties more effectively.

21. I felt free to ask questions of my unit leader whenever I was unclear about what duties I should perform or how to perform those duties.

6. Satisfaction with Assignment (ASATISF). Satisfaction with various aspects of the cadet's summer assignment was assessed with three items. These items used a response scale with six alternatives describing different levels of satisfaction or dissatisfaction. For all items, high scores indicate a high level of satisfaction.

22. How satisfied were you with your CBT/CFT assignment this summer?

26. The challenge of my duty assignments.

29. The extent to which I could see the results of my performance.

7. Satisfaction with Peers (PSATISF). Satisfaction with the cadet's peers in his/her work unit was assessed with two items. The same response format and scoring procedures were used with these items as for satisfaction with assignment.

28. The friendliness of others in my unit (peers).

30. The helpfulness of others in my unit (peers).

8. Satisfaction with Leader (LSATISF). Satisfaction with the cadet's unit leader was assessed with four items. The same response format and scoring procedures were used with these items as for satisfaction with assignment.

23. The extent to which my unit commander/leader allowed me to make decisions on my own.

24. My work relationship with my unit commander/ supervisor.

25. The extent to which my unit commander/supervisor listened to my suggestions and recommendations.

27. The competence of my unit commander/supervisor in doing his/her job.

9. Valence of Leader Actions (TOTVAL). Eight items assessed the cadet's subjective evaluation of the valence associated with the various actions the unit leader might take. Vroom (1964) identifies valence as a major variable in his theory of motivation (valence refers to the positive or negative feelings about anticipated satisfaction associated with a particular outcome). In these questions, we operationalized the valence concept by asking respondents to indicate, on a five point scale, how good or bad they would feel if

particular events were to occur. These items are scored so that a high degree of affect is associated with a high score (i.e., feeling very bad about a negative event such as a public reprimand or feeling very good about a positive event such as a good performance rating). The sum of the eight items represents the degree to which these various leader actions have any affective consequence (valence) in the mind of the respondent.

37. If my unit leader publicly praised my good performance, I would feel...
38. If my unit leader indicated personal respect for my performance as a cadet, I would feel...
39. If my unit leader publicly blamed me for poor performance, I would feel...
40. If my unit leader told the TAC about my good performance, I would feel...
41. If my unit leader rated me high in military leadership, I would feel...
42. If my unit leader rated me low in military leadership, I would feel...
43. If my unit leader gave me help with problems related to my duties, I would feel...
44. If my unit leader gave me help with personal problems, I would feel...

10. Outcome of Upward Influence Efforts (OUTCOME). Five items assessed the cadet's reaction to their own efforts to influence a person of higher rank (either cadet or regular Army officer) with regard to some decision or action. Only cadets reporting that they actually made such an effort during summer training responded to these questions. The items were scored so that high numbers indicated successful influence, positive feelings on the parts of either party, confidence while carrying out the influence effort and satisfaction with how the situation was handled. A six point agree-disagree scale was used to respond to these items.

56. I was successful in influencing the other person.
57. I felt good about the way I influenced the other person.
58. The other person felt bad about the way I influenced him/her.
59. At the time of the incident, I felt confident that I could influence this person.
60. Knowing what I know now, I handled the problem in the best way possible.

#### Scale Reliability

Cronbach's (1951) coefficient alpha, an index of internal consistency reliability, is reported for each of these 10 scales in Table 3. Separate alpha values and the sample size for each coefficient are reported separately for each of the four class years. Sample sizes vary somewhat within a class because the calculation of alpha is based only on the number of respondents providing analyzable data for all questions comprising a particular scale. Using a listwise strategy for handling missing data, we do not include in our calculations the data from any subject who fails to respond to even a single question comprising the scale. The sample sizes are relatively small for the "Outcome of Upward Influence Efforts" scale. Cadets responded to these items only if they indicated on item #55 that they had actually attempted to exercise such influence..

The reliability values reported on Table 3 tend to be lower for cadets in the Class of 1981 than for cadets in the other three classes. Cadets in this class described themselves in the leadership role rather than a superior. These lower coefficients of internal consistency may reflect greater differentiation (i.e., less homogeneity) among the items comprising many of these scales when reporting one's own leadership acts than when reporting on the actions of another person in the leadership role.

As a final note regarding the reliability data summarized in Table 3, it should be recalled that the Leader Effectiveness and Unit Effectiveness scales are based on the sum of z scores. The alpha coefficient reported for these two scales are standardized alphas. For all other scales, there was little difference between the alpha coefficient based on raw scores and the standardized alpha. For these scales, raw scores were summed without any transformations and the alpha coefficient reported is based on these raw scores.

Table 3  
Reliability for Scale Scores (Alpha Coefficients)

			Class Year and N			
	<u>Scale</u>	<u>Items</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>
1.	Leader Effectiveness	3	.87(389)	.64(648)	.87(785)	.82(788)
2.	Unit Effectiveness	2	.70(394)	.67(650)	.76(831)	.66(799)
3.	Downward Communication Content	5	.77(333)	.69(556)	.74(624)	.70(694)
4.	Downward Communication Quality	4	.71(398)	.61(674)	.79(832)	.64(805)
5.	Upward Communication	3	.87(398)	.73(669)	.82(828)	.79(806)
6.	Satisfaction with Assignment	3	.73(356)	.76(405)	.64(827)	.61(802)
7.	Satisfaction with Peers	2	.76(397)	.72(651)	.79(833)	.79(810)
8.	Satisfaction with Leader	4	.86(381)	.62(608)	.83(827)	.78(794)
9.	Valence of Leader Actions	8	.78(383)	.76(662)	.79(818)	.70(807)
10.	Outcome of Upward Influence Efforts	5	.65(292)	.75(453)	.72(555)	.62(208)

#### SINGLE-ITEM VARIABLES

The remainder of the questionnaire relied on single items to assess a particular variable. It is not reasonable to combine these items into scale scores in the manner described above. However, these items do fit into conceptual categories that are useful in describing the questionnaire. Following each item is the SPSS variable name used on the computer file.

Causal attributors. Six items assessed beliefs concerning the causes of unit performance. The cadets rated the extent to which each of these factors contributed to the performance of their unit during summer training. The factors to be rated included causes internal to the unit leader (skill and effort), internal to the unit subordinates (skill and effort), and factors external to both (good and bad luck). The concepts of internal and external attributions have played a crucial role in much prior research concerned with attribution theory as have the distinctions between ability, effort and luck.

These questions were presented with a four point scale indicating the degree to which each factor contributed to unit performance. High scores indicate that a particular factor was not perceived to be an important contributor to unit performance.

31. The skill of the leader (LSKILL31).
32. The skill of the unit subordinate (USKILL32).
33. Hard work on the part of the unit leader (LWORK33)
34. Hard work on the part of the unit subordinate (UWORK34).
35. Good luck (GLUCK35).
36. Bad luck (BLUCK36)

Bases of Power. Six items assessed beliefs regarding reasons for complying with the orders and suggestions of the unit supervisor. These items were selected to match the six bases of social power suggested by French and Raven (1960) and Raven (1974); referent, expert, reward, coercive, legitimate and information. These questions were adapted from those developed by Bachman, et al. (1966).

These questions were presented in a five point agree-disagree scale. High scores indicate high level of compliance because of a particular base of power.

45. I complied because I personally respected my unit leader, and wanted to act in a way that merited his/her respect and admiration (REFRNT45).
46. I complied because I respected his/her judgment about things in which my unit leader was more of an expert than I (EXPERT46).
47. I complied because my unit leader could give special help and benefits to those who cooperated with him/her (REWARD47).
48. I complied because my unit leader could apply pressure of penalize those who did not cooperate (COERC48).
49. I complied because my unit leader had a legitimate right, considering his/her position, to expect that his/her suggestions and orders would be carried out (LEGIT49).
50. I complied because my unit leader had information which I lacked concerning the operation of the unit (INFO50).

Contingent rewards and punishments. Four items assessed beliefs concerning the relationship between different levels of performance and receiving different rewards and punishments from the unit leader. These items focused specifically on the degree to which rewards and punishments were seen as being contingent on a given level of performance. Such beliefs are termed

"instrumentalities" in Vroom's (1964) theory of motivation; i.e., the focus is on perceptions that performance is instrumental in attaining positive or negative outcome. Vroom has shown such beliefs to be an important component of motivation.

These questions were presented in a five point scale format which required respondents to indicate the frequency with which certain performance-outcome relationships occurred. High scores indicate frequent occurrence of such relationships.

51. How often was outstanding task performance in your unit followed by positive leadership acts from your unit leader (EXCELR51)?
52. How often was poor task performance in your unit followed by negative leadership acts from your unit leader (e.g., group punishment, yelling) (POORP52)?
53. How often was above average, but not outstanding, task performance in your unit followed by positive leadership acts from your unit leader (e.g., praise, a good report, personal recognition) (AAVERR53)?
54. How often was unsatisfactory task performance in your unit followed by performance counseling and constructive critiques rather than reprimands (BAVERP54)?

Influence strategies. Nine items assessed perceptions concerning the manner by which unit leaders influenced their subordinates. These nine factors represent a synthesis of several different efforts to identify general types of strategies for social influence (e.g., Johnson, 1978; Falbo, 1977). The dimensions reflected in these items include direct versus indirect, rational versus irrational and concrete versus personal resources.

Respondents used six point scales to assess the frequency with which the unit leader made use of each strategy when attempting to influence his/her subordinates. High scores indicate frequent use of a particular strategy.

61. Made direct statements or requests without providing any explanations of the reasons behind such requests. (DTNRAT61)
62. Made direct statements or requests, and backed them up by claiming to have superior skill or knowledge ("I know best"). (DTEXPT62)
63. Made direct statements or requests while also providing the reasons behind the requests. (DTRAT62)
64. Did not make direct statements or requests, but hinted or made indirect side comments. (INDRCT64)
65. Threatened to use forms of punishment. (DTTHRT65)
66. Used ingratiating tactics such as flattery or "apple polishing." (INGRAT66)
67. Used personal punishments such as ignoring individuals or withdrawing personal support. (PERPUN67)
68. Used personal reward such as giving extra attention, help, support or friendship. (PERREW68)
69. Made a direct statement or request, and asked you to go along with it as a way of helping the leader. (HPLSS69)

Effectiveness of influence strategies. Two additional questions were asked of those cadets in the Class of 1983. They were to pick the one most effective and one least effective influence strategy from the nine considered. Due to administrative errors, these questions were not considered in the re-organization week questionnaire administered to the other classes.

85. From the nine influence strategies listed below, pick the one that was the most effective: (PSTRAT85)
  - A. Direct statement without explanation
  - B. Direct statement claiming skill
  - C. Direct statement providing explanation
  - D. Indirect statement
  - E. Threatened to use punishment
  - F. Use of flattery
  - G. Used personal punishment (ignoring individuals)
  - H. Used personal reward (extra attention or help)
  - I. Made request to help me as the leader

86. From the nine influence strategies listed below, pick the one that was the least effective: (PSTRAT86)

- A. Direct statement without explanation
- B. Direct statement claiming skill
- C. Direct statement providing explanation
- D. Indirect statement
- E. Threatened to use punishment
- F. Use of flattery
- G. Used personal punishment (ignoring individuals)
- H. Used personal reward (extra attention or help)
- I. Made request to help me as the leader

#### EXPLORATORY FACTOR ANALYSIS

The 10 scales reported above were constructed on a priori theoretical grounds. To determine if there were any unintended or undetected clustering among the 64 substantive items comprising the questionnaire, exploratory factor analyses were performed. Separate factor analyses were conducted on the data set comprised of each class year using the SPSS-PA2 option. This analysis uses multiple correlations as initial commonality estimates and iterates to improve on these estimates. A varimax rotation was used with an eigenvalue of 1.0 as the criterion for determining the number of factors to rotate.

Two important pieces of information were provided by these analyses. First, we found a very large first factor in each of these analyses. This factor had a general tone of evaluation and included evaluation of the leader and unit performance, satisfaction with various components of the summer experience, evaluation of communication processes, and other scattered items with an evaluative tone. The positive correlations among the scale scores and many of the individual items described in a later part of this report are consistent with the findings of our factor analyses. Also, the alpha coefficient for the entire 64 item scale ranges from .77 to .82 for

the four classes. These several pieces of empirical evidence suggest that our questionnaire may be measuring a general evaluative reaction to the summer training experience. The psychological reactions of our respondents may be less differentiated than our multidimensional scale construction efforts had hoped to elicit. Alternatively, the several dimensions assessed by this questionnaire may be psychologically independent, with fairly high correlations limited to the peculiarities of the present sample.

The second bit of information drawn from the factor analyses is based on what we did not find. The factor analyses did not identify any new clusters of items that seemed meaningful in a psychological sense. The number of factors meeting the eigenvalue criterion of 1.0 was substantial, from 17 to 20 for the four different classes. For the most part, these factors were a clustering of items that we had designed to go together, e.g., the valence items or the outcome items. These empirically identified factors support our conceptually guided scale development. However, these results did not suggest new scales that we might consider in subsequent analyses with a more substantive focus.

#### DISCRIMINATIVE ANALYSES

As the summer experiences were quite different for the four class years, descriptive data are best presented separately for each class year. These analyses for each class year include 37 variables\*: the 10 multi-item scales, the 25 items each representing a different variable, the gender of the respondent, and the gender of the respondent's unit leader. These last two variables are obviously not scale responses. However, as gender is a principal

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\*For Class of 1983, 39 variables are included because of the two extra questions asked of this group.

concern in the present study, it seems quite appropriate to include them in these basic descriptive analyses.

Tables 4 through 11 present the mean, standard deviations, and inter-correlation matrix for the Classes of 1980, 1981, 1982 and 1983 respectively. As so much data is presented in these lengthy, multi-page tables, it is useful to identify the pages of this report dedicated to data from each class.

Class of 1980: pages 21 and 22

Class of 1981: pages 23 and 24

Class of 1982: pages 25 and 26

Class of 1983: pages 27 and 28

Table 4 - Class of 1980

	ZEFFCT	ZEFFCT	CONTENT	CQUALITY	CUPWARD	ASATISF	PSATISF	LSATISF	TOTAL	NOTCOP
ZEFFCT	1.0000 ( .0000 ) P=*****	.3956 ( .368 ) P= .001	.52b3 ( .318 ) P= .001	.5388 ( .372 ) P= .001	.4787 ( .373 ) P= .001	.0056 ( .336 ) P= .059	.1618 ( .314 ) P= .001	.5203 ( .159 ) P= .001	.2675 ( .362 ) P= .001	.1168 ( .278 ) P= .006
ZEFFCT	1.0000 ( .0000 ) P=*****	.3772 ( .322 ) P= .001	.2778 ( .377 ) P= .001	.2689 ( .377 ) P= .001	.2611 ( .337 ) P= .001	.2424 ( .377 ) P= .001	.3478 ( .363 ) P= .001	.1637 ( .368 ) P= .001	.1627 ( .291 ) P= .001	.1627 ( .291 ) P= .001
CONTENT	1.0000 ( .0000 ) P=*****	.5303 ( .327 ) P= .001	.5198 ( .329 ) P= .001	.4893 ( .349 ) P= .001	.21b6 ( .292 ) P= .001	.21b6 ( .326 ) P= .001	.5632 ( .320 ) P= .001	.2891 ( .322 ) P= .001	.19b7 ( .266 ) P= .001	.19b7 ( .266 ) P= .001
CQUALITY	1.0000 ( .0000 ) P=*****	.5193 ( .392 ) P= .001	.5083 ( .349 ) P= .001	.2673 ( .389 ) P= .001	.53b2 ( .375 ) P= .001	.53b2 ( .375 ) P= .001	.3187 ( .361 ) P= .001	.2452 ( .285 ) P= .001	.2452 ( .285 ) P= .001	.2452 ( .285 ) P= .001
CUPWARD	1.0000 ( .0000 ) P=*****	.2517 ( .351 ) P= .001	.2163 ( .391 ) P= .001	.2163 ( .391 ) P= .001	.6056 ( .316 ) P= .001	.6056 ( .316 ) P= .001	.3238 ( .382 ) P= .001	.2750 ( .286 ) P= .001	.2750 ( .286 ) P= .001	.2750 ( .286 ) P= .001
ASATISF	1.0000 ( .0000 ) P=*****	.3172 ( .350 ) P= .001	.3172 ( .350 ) P= .001	.40b6 ( .339 ) P= .001	.40b6 ( .339 ) P= .001	.2328 ( .330 ) P= .001	.2328 ( .330 ) P= .001	.2328 ( .257 ) P= .001	.2328 ( .257 ) P= .001	.2328 ( .257 ) P= .001
PSATISF	1.00000 ( .00000 ) P=*****	.31b2 ( .315 ) P= .001	.2270 ( .316 ) P= .001	.2270 ( .316 ) P= .001	.3387 ( .316 ) P= .001	.3387 ( .316 ) P= .001	.3387 ( .316 ) P= .001			
LSATISF	1.00000 ( .00000 ) P=*****	.2963 ( .366 ) P= .001	.2991 ( .366 ) P= .001	.2991 ( .366 ) P= .001	.2991 ( .366 ) P= .001	.2991 ( .366 ) P= .001	.2991 ( .366 ) P= .001			
TOTAL						1.0000 ( .0000 ) P=*****				
NOTCOP										

Table 5 - Class of 1980

ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:	ZIEFFC:
	RIGHT-FRONT	RIGHT-MIDDLE	RIGHT-HIGH	CENTER-FRONT	CENTER-MIDDLE	CENTER-HIGH	LEFT-FRONT	LEFT-MIDDLE	LEFT-HIGH	CUPWARD	ASATSF	PSATSF	ISATSF	TORVAL	ORVAL
L5E71L31	-.3993 (-.358) P=.001	-.2187 (-.361) P=.001	-.3125 (-.310) P=.001	-.3528 (-.376) P=.001	-.3388 (-.377) P=.001	-.1168 (-.337) P=.003	-.1154 (-.361) P=.013	-.1227 (-.361) P=.001	-.1230 (-.361) P=.001	-.1047 (-.361) P=.001	-.2830 (-.368) P=.001	-.2830 (-.368) P=.001	-.1047 (-.368) P=.001	-.2711 (-.368) P=.001	
UR71L32	-.1476 (-.360) P=.003	-.2155 (-.366) P=.002	-.0931 (-.317) P=.019	-.1495 (-.377) P=.002	-.2024 (-.316) P=.001	-.2391 (-.337) P=.001	-.2810 (-.376) P=.001	-.2880 (-.362) P=.001	-.2813 (-.362) P=.001	-.2223 (-.367) P=.001	-.2223 (-.367) P=.001	-.2223 (-.367) P=.001	-.2751 (-.367) P=.001		
LX72L33	-.4253 (-.362) P=.001	-.2837 (-.368) P=.001	-.3646 (-.319) P=.001	-.3638 (-.319) P=.001	-.3407 (-.319) P=.001	-.1624 (-.310) P=.001	-.1344 (-.378) P=.001	-.1344 (-.361) P=.001	-.1344 (-.361) P=.001	-.1956 (-.361) P=.001	-.1956 (-.361) P=.001	-.1956 (-.361) P=.001	-.2100 (-.279) P=.001		
UX74F34	-.0185 (-.367) P=.362	-.1851 (-.372) P=.001	-.0880 (-.321) P=.058	-.1115 (-.383) P=.015	-.1321 (-.381) P=.001	-.1316 (-.383) P=.001	-.1707 (-.383) P=.001	-.1707 (-.368) P=.008	-.1248 (-.368) P=.008	-.2037 (-.368) P=.001	-.2037 (-.368) P=.001	-.2037 (-.368) P=.001	-.3118 (-.281) P=.001		
GLUR35	.0211 (-.260) P=.365	.0211 (-.265) P=.361	.0776 (-.269) P=.331	.0006 (-.295) P=.060	.0024 (-.297) P=.060	.0870 (-.263) P=.080	.0157 (-.296) P=.330	.0183 (-.286) P=.379	.1141 (-.286) P=.027	.1965 (-.286) P=.027	.1965 (-.286) P=.027	.1965 (-.286) P=.027	.1965 (-.286) P=.027		
BGLUR36	.1193 (-.267) P=.026	.1134 (-.274) P=.030	.1133 (-.279) P=.010	.1115 (-.283) P=.010	.0700 (-.285) P=.110	.1031 (-.253) P=.051	.0578 (-.284) P=.166	.0634 (-.272) P=.138	.1143 (-.272) P=.010	.1267 (-.205) P=.033	.1267 (-.205) P=.033	.1267 (-.205) P=.033	.1267 (-.205) P=.033		

Table 6 - Class of 1981

	ZEFFCT	ZEFFCT	CONTENT	QUALITY	CUTWARD	ASATISF	PSATISF	LSATISF	TOTVAL	OUTCOM
ZEFFCT	1.0000 ( .0 ) P=*****	*2659 ( 617 ) P=.001	.3090 ( 543 ) P=.001	.3175 ( 610 ) P=.001	.1716 ( 638 ) P=.001	.2580 ( 488 ) P=.001	.1260 ( 625 ) P=.001	.1878 ( 584 ) P=.001	.1808 ( 636 ) P=.001	.1586 ( h26 ) P=.001
ZEFFCT	1.0000 ( .0 ) P=*****	*3291 ( 535 ) P=.001	.2271 ( 637 ) P=.001	.2040 ( 633 ) P=.001	.3393 ( 386 ) P=.001	.2414 ( 621 ) P=.001	.3012 ( 370 ) P=.001	.1455 ( 630 ) P=.001	.1279 ( h26 ) P=.001	
CONTENT	1.0000 ( .0 ) P=*****	*3690 ( 554 ) P=.001	*3045 ( 552 ) P=.001	*3045 ( 342 ) P=.001	*3045 ( 542 ) P=.001	*2721 ( 542 ) P=.001	*3220 ( 519 ) P=.001	*0933 ( 519 ) P=.001	*1735 ( 319 ) P=.001	
QUALITY	1.0000 ( .0 ) P=*****	*3170 ( 662 ) P=.001	*3450 ( 390 ) P=.001	*2731 ( 647 ) P=.001	*2731 ( 647 ) P=.001	*3061 ( 659 ) P=.001	*2726 ( 659 ) P=.001	*1730 ( h12 ) P=.001		
CUTWARD			1.0000 ( .0 ) P=*****	.2404 ( 396 ) P=.001	.2404 ( 645 ) P=.001	.2048 ( 645 ) P=.001	.2048 ( 598 ) P=.001	.2353 ( 656 ) P=.001	.2161 ( h41 ) P=.001	
ASATISF				1.0000 ( .0 ) P=*****	.3320 ( 395 ) P=.001	.5114 ( 368 ) P=.001	.1922 ( 395 ) P=.001	.1307 ( 276 ) P=.015		
PSATISF					1.0000 ( .0 ) P=*****	.1385 ( 593 ) P=.001	.2080 ( 612 ) P=.001	.2232 ( 594 ) P=.001	.2232 ( h34 ) P=.001	
LSATISF						1.0000 ( .0 ) P=*****	1.0000 ( .0 ) P=*****	1.0000 ( .0 ) P=*****	1.0000 ( .0 ) P=*****	
TOTVAL										
OUTCOM										

Table 7 - Class of 1981

	Z-EFFECT	Z-EFFECT	CONTENT	CQUALITY	CUPWARD	ASATISF	PSATISF	ISATISF	TTEST	DIFFER.
ESKULL31	-.1876 (-.612) P=.001	-.2029 (-.660) P=.001	-.1810 (-.531) P=.001	-.205 (-.620) P=.001	-.0604 (-.631) P=.005	-.2714 (-.386) P=.001	-.0766 (-.616) P=.027	-.2111 (-.576) P=.001	-.1786 (-.625) P=.001	-.2023 (-.626)
HRY111127	-.0836 (-.635) P=.001	-.3226 (-.635) P=.001	-.1124 (-.548) P=.001	-.1557 (-.650) P=.001	-.1296 (-.658) P=.001	-.00271 (-.397) P=.032	-.1936 (-.612) P=.001	-.1611 (-.596) P=.001	-.0657 (-.623) P=.001	-.0808 (-.622)
LADPK31	-.1161 (-.627) P=.001	-.2511 (-.623) P=.001	-.1701 (-.548) P=.001	-.2052 (-.547) P=.001	-.1771 (-.618) P=.001	-.2043 (-.391) P=.001	-.1595 (-.632) P=.001	-.2535 (-.587) P=.001	-.2463 (-.611) P=.001	-.2188 (-.611)
WONK31	-.1830 (-.652) P=.001	-.3199 (-.640) P=.001	-.2162 (-.545) P=.001	-.2176 (-.656) P=.001	-.1751 (-.653) P=.001	-.1026 (-.394) P=.001	-.1284 (-.639) P=.001	-.1721 (-.593) P=.001	-.1875 (-.650) P=.001	-.1512 (-.610) P=.001
CLWK35	.0210 (-.472) P=.301	-.0451 (-.476) P=.164	.0258 (-.412) P=.300	.0620 (-.400) P=.085	-.0558 (-.490) P=.027	.0079 (-.301) P=.446	.0832 (-.481) P=.031	-.0272 (-.150) P=.283	.0167 (-.486) P=.310	.0312 (-.311) P=.266
BLCK35	.0865 (-.460) P=.032	.1621 (-.465) P=.001	.0762 (-.490) P=.075	.1577 (-.476) P=.001	.0143 (-.475) P=.378	.2144 (-.291) P=.001	.1732 (-.464) P=.001	.1557 (-.433) P=.001	.2135 (-.472) P=.001	.0531 (-.310) P=.160

Table 8 - Class of 1982

	Z-EFFECT	Z-EFFECT	CONFIDENT	QUALITY	UPWARD	ASATISF	P-SATISF	LSATISF	TOTAL	CONFID.
ZIEFFECT	1.0000 ( .000 ) P=*****	.1716 ( .779 ) P=.001	.511h ( .597 ) P=.001	.5873 ( .776 ) P=.001	.4791 ( .773 ) P=.01	.1763 ( .771 ) P=.01	.3099 ( .778 ) P=.006	.5673 ( .770 ) P=.001	.2161 ( .76h ) P=.001	.0056 ( .10 ) P=.050
ZUEFFECT	1.0000 ( .0 ) P=*****	.3668 ( .621 ) P=.001	.3012 ( .821 ) P=.001	.2702 ( .817 ) P=.001	.2239 ( .816 ) P=.001	.2382 ( .82h ) P=.001	.3488 ( .816 ) P=.001	.1261 ( .809 ) P=.001	.0519 ( .54h ) P=.039	
CONTENT										
QUALITY										
UPWARD										
ASATISF										
PSATISF										
LSATISF										
TOTAL										
OUTCOM										

Table 9 - Class of 1982

	Z-EFFECT	Z-EFFECT	CONTENT	EQUALITY	CUPWARD	ASATIST	PSATISP	LSATISP	TOTAL	norm
LSKILL31	-.4740 (-.756) P= .001	-.2358 (-.801) P= .001	-.3162 (-.602) P= .001	-.4038 (-.801) P= .001	-.3328 (-.798) P= .001	-.2046 (-.797) P= .001	.0092 (-.804) P= .001	-.1673 (-.797) P= .001	-.1925 (-.793) P= .001	.0592 (.533) P= .006
LSKILL32	-.0069 (-.747) P= .125	-.0626 (-.791) P= .039	-.0111 (-.597) P= .158	-.0740 (-.790) P= .019	-.0569 (-.786) P= .055	-.1169 (-.787) P= .001	-.1343 (-.798) P= .001	-.0222 (-.787) P= .267	-.1355 (-.781) P= .001	-.0628 (-.528) P= .015
LWORK33	-.4501 (-.759) P= .001	-.2987 (-.803) P= .001	-.3385 (-.605) P= .001	-.3979 (-.803) P= .001	-.3284 (-.798) P= .001	-.1877 (-.798) P= .001	-.0215 (-.805) P= .271	-.4806 (-.798) P= .001	-.1759 (-.793) P= .001	-.0261 (.535) P= .274
UWORK34	-.0105 (-.756) P= .386	-.1365 (-.800) P= .001	-.0605 (-.602) P= .069	-.1180 (-.799) P= .001	-.0439 (-.795) P= .168	-.1079 (-.796) P= .001	-.1714 (-.803) P= .001	-.0721 (-.796) P= .021	-.1558 (-.791) P= .001	-.2101 (.531) P= .001
SLUCK35	-.0258 (-.602) P= .263	.0593 (-.636) P= .067	.0307 (-.483) P= .251	.0819 (-.633) P= .020	.0703 (-.628) P= .039	.0119 (-.628) P= .383	.0598 (-.631) P= .066	.0381 (-.629) P= .110	.1155 (-.625) P= .002	.1081 (.528) P= .013
BWUC36	.0250 (-.585) P= .273	.0879 (-.618) P= .018	.0790 (-.615) P= .012	.0910 (-.610) P= .013	.0559 (-.614) P= .014	.0787 (-.616) P= .026	.0757 (-.616) P= .030	.0318 (-.617) P= .216	.0398 (-.609) P= .163	.1161 (.515) P= .001

Table 10 - Class of 1983

	ZLEFFCT	ZUFFECT	CONTENT	CQUALITY	CUPWARD	ASATISF	PZERSAT	TOTEFF	LSATISF	MVAL	OUTCOM
ZLEFFCT	1.00000 ( .0 ) P=*****	.4158 ( .780 ) P= .001	.4623 ( .682 ) P= .001	.1625 ( .781 ) P= .001	.3284 ( .785 ) P= .001	.2148 ( .762 ) P= .004	.0967 ( .786 ) P= .004	.9019 ( .780 ) P= .001	.4971 ( .772 ) P= .001	.1300 ( .780 ) P= .001	.0565 ( .199 ) P= .214
ZUFFECT	1.00000 ( .0 ) P=*****	.2867 ( .685 ) P= .001	.3008 ( .791 ) P= .001	.2398 ( .795 ) P= .001	.2057 ( .792 ) P= .001	.2138 ( .790 ) P= .001	.7678 ( .780 ) P= .001	.3140 ( .783 ) P= .001	.1396 ( .790 ) P= .001	.1055 ( .204 ) P= .067	
CCONTENT	1.00000 ( .0 ) P=*****	.4082 ( .692 ) P= .001	.3954 ( .698 ) P= .001	.3218 ( .694 ) P= .001	.1929 ( .694 ) P= .001	.4624 ( .694 ) P= .001	.5104 ( .676 ) P= .001	.5104 ( .682 ) P= .001	.1773 ( .680 ) P= .001	.0596 ( .180 ) P= .213	
CQUALITY	1.00000 ( .0 ) P=*****	.3872 ( .802 ) P= .001	.2365 ( .798 ) P= .001	.0908 ( .805 ) P= .005	.4521 ( .776 ) P= .001	.4521 ( .776 ) P= .001	.4521 ( .790 ) P= .001	.4521 ( .790 ) P= .001	.1373 ( .797 ) P= .001	.1822 ( .207 ) P= .004	
CUPWARD	1.00000 ( .0 ) P=*****	.2741 ( .602 ) P= .001	.1024 ( .806 ) P= .002	.3132 ( .777 ) P= .001	.3132 ( .777 ) P= .001	.3132 ( .777 ) P= .001	.5269 ( .793 ) P= .001	.5269 ( .793 ) P= .001	.1179 ( .794 ) P= .001	.1671 ( .207 ) P= .004	
ASATISF				1.00000 ( .0 ) P=*****	.2998 ( .802 ) P= .001	.2612 ( .774 ) P= .001	.2612 ( .791 ) P= .001	.5291 ( .791 ) P= .001	.2278 ( .795 ) P= .001	.0731 ( .207 ) P= .147	
PZERSAT					1.00000 ( .0 ) P=*****	.1821 ( .780 ) P= .001	.1821 ( .780 ) P= .001	.2248 ( .791 ) P= .001	.1852 ( .801 ) P= .001	.0870 ( .208 ) P= .102	
TOTEFF						1.00000 ( .0 ) P=*****	.4938 ( .764 ) P= .001	.4938 ( .764 ) P= .001	.1638 ( .772 ) P= .001	.0983 ( .206 ) P= .012	
LSATISF							1.00000 ( .0 ) P=*****	.1998 ( .765 ) P= .001	.1998 ( .765 ) P= .001	.1580 ( .206 ) P= .012	
MVAL								1.00000 ( .0 ) P=*****	1.00000 ( .0 ) P=*****	.3707 ( .207 ) P= .001	
OUTCOM										1.00000 ( .0 ) P=*****	

Table 11 - Class of 1983

	ZIEFFECT	ZHEFACT	CCONTENT	QUALITY	CUPWARD	ASATISF	PERFSTAT	TOTEFF	LSTATSP	TOTALB	OUTCOM
1SK1L31	-.4053 (-.753) P=.001	-.2063 (-.764) P=.001	-.3204 (-.664) P=.001	-.3479 (-.771) P=.001	-.2396 (-.773) P=.001	-.2079 (-.771) P=.001	-.1021 (-.775) P=.002	-.1160 (-.745) P=.001	-.3166 (-.765) P=.001	-.2019 (-.760) P=.001	-.0075 (-.204) P=.107
1SK1L32	-.0738 (-.460) P=.026	-.1918 (-.678) P=.001	-.1165 (-.598) P=.002	-.0929 (-.685) P=.007	-.0791 (-.684) P=.017	-.1371 (-.683) P=.001	-.1666 (-.691) P=.001	-.1380 (-.661) P=.001	-.1386 (-.682) P=.001	-.1386 (-.682) P=.001	-.1446 (-.148) P=.076
1WORK33	-.1170 (-.761) P=.001	-.2169 (-.769) P=.001	-.3462 (-.671) P=.001	-.3233 (-.777) P=.001	-.2272 (-.777) P=.001	-.2011 (-.775) P=.001	-.1014 (-.780) P=.002	-.3887 (-.753) P=.001	-.3441 (-.757) P=.001	-.2069 (-.751) P=.001	-.1066 (-.202) P=.066
1WORK34	-.0387 (-.722) P=.119	-.1792 (-.734) P=.001	-.1243 (-.645) P=.001	-.1432 (-.739) P=.001	-.0813 (-.710) P=.013	-.1482 (-.739) P=.001	-.2152 (-.743) P=.001	-.1161 (-.716) P=.001	-.0840 (-.731) P=.012	-.1550 (-.731) P=.001	-.1225 (-.194) P=.044
1WORK35	-.0403 (-.581) P=.166	.0032 (-.589) P=.465	.0270 (-.521) P=.270	.0091 (-.592) P=.412	-.0603 (-.593) P=.071	-.0510 (-.591) P=.108	-.0034 (-.595) P=.467	-.0256 (-.577) P=.270	-.0533 (-.581) P=.099	.0261 (-.502) P=.261	.0030 (-.150) P=.156
1WORK36	.0307 (-.567) P=.223	.0469 (-.577) P=.130	.1139 (-.510) P=.005	.1210 (-.580) P=.001	.0106 (-.580) P=.000	.0175 (-.578) P=.127	.0651 (-.583) P=.058	.0440 (-.563) P=.149	.0568 (-.573) P=.087	.0281 (-.570) P=.250	.0030 (-.151) P=.155

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The 1979 Summer Leadership Study:  
A Comparison of Male and Female Leaders

Technical Report 80-2

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The 1979 Summer Leadership Study:  
A Comparison of Male and Female Leaders

The purpose of this report is to describe the results of statistical analyses comparing the reactions of followers to male and female leaders. All leaders were West Point cadets from the Class of 1980 or 1981 serving in the leadership cadre for Cadet Basic Training (CBT) or Cadet Field Training (CFT). All followers were members of the Class of 1982 or 1983 undergoing CFT or CBT respectively. Following their summer training, members in the classes of 1982 and 1983 completed questionnaire, part of which concerned leadership in their units. The responses to these 64 items provide the data analyzed for the present report.

Our analyses go beyond a simple comparison of male and female leaders. As we also knew the gender of the followers responding to the questionnaire, we could assess the interaction of leader gender and follower gender. A serious limitation of a prior laboratory study of gender and leadership at West Point was that all followers were males (Rice, Bender and Vitters, 1980). In discussing the results of that study, we speculated that the gender composition of leader-follower dyads might very well alter the nature of the leadership process. For example, male leader-male follower dyads may respond to each other quite differently than male leader-female follower, female leader-female follower, or female leader-male follower dyads. The present study provided the opportunity to put such speculation to an empirical test.

The 1979 Summer Leadership Study:  
A Comparison of Male and Female Leaders

Jerome Adams, Robert W. Rice, and Debra Instone

776 West Point cadets undergoing Cadet Basic Training (CBT) and 842 cadets in Cadet Field Training (CFT) completed a questionnaire describing and evaluating their unit leader. The questionnaire included measures of unit and leader effectiveness, various facets of cadet satisfaction, communication, motivation, upward influence efforts, attributions, bases of social power, contingent administration of rewards/punishments, and strategies of social influence. A 2 x 2 analysis of variance (Leader Gender x Follower Gender) was applied to the 30 scores descriptive of leaders in each training site. Results showed few Leader Gender effects, but a good number of Follower Gender effects. Almost no interactions involving Leader Gender and Follower Gender were detected. These results were discussed in terms of the unique properties of these training sites and the available literature concerned with leadership and gender.

The 1979 Summer Leadership Study:  
A Comparison of Male and Female Leaders

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## METHOD

A previous technical report describes in detail the procedures of the 1979 Summer Leadership Study (Technical Report 80-1, "The 1979 Summer Leadership Study: Procedures and Descriptive Analyses of the Basic Questionnaire," (Adams, Rice, Instone, and Prince, 1980). For the present report, we will provide a brief review of these procedures.

### Subjects

Cadets at the U.S. Military Academy in leader and trainee roles at CFT and CBT are the subjects of concern for this particular report of the 1979 Summer Leadership Study. At CBT, we have usable responses from 690 males and 86 females; 712 of these cadets described a male squad leader and 64 described a female squad leader. At CFT, 767 males and 75 females provided usable responses to the questionnaire; 727 described a male administrative training detail platoon leader and 115 described a female.

### Dependent Measures

During reorganization week in August 1979, the cadets in the Class of 1982 completed a questionnaire in which they described their administrative platoon leader during CFT. In October 1979, the Class of 1983 completed a virtually identical questionnaire in which they described their CBT squad leader. Because of the nature of training, platoon was the appropriate level of analysis for CFT. However, squad was the more appropriate measure in CBT.

The 64 substantive questions comprising the questionnaire assessed the following concepts:

<u>Abbreviated Variable Name</u>	<u>No. of Items</u>	<u>Description of Variable</u>
<b>Multi-item Scales:</b>		
ZLEFFCT	3	perceived effectiveness of leader
ZUEFFCT	2	perceived effectiveness of unit
CCONTENT	5	perceived effectiveness of downward communication (5 content areas rated)
CQUALITY	4	perceived quality of downward communication
CUPWARD	3	perceived receptivity of leader to attempts at upward communication
ASATISF	3	satisfaction with summer assignment
PSATISF	2	satisfaction with peers in summer unit
LSATISF	4	satisfaction with leader of summer unit
TOTVAL	8	perceived value (valence) of different rewards and punishments leader can provide to followers
OUTCOME	5	outcome of attempts at upward influence
<b>Individual Items:</b>		
attributions	6	six items tapping beliefs about the degree to which different factors were the cause of unit performance
bases of power	6	six items tapping different bases of power as reasons for complying with the orders and suggestions of the unit leader
contingencies	4	four items tapping the frequency with which rewards and/or punishments were administered contingent on the level of performance
influence strategies	9	nine items tapping the frequency with which leaders used various strategies for influencing subordinates

## ANALYSIS

A Leader Gender x Follower Gender ( $2 \times 2$ ) factorial analyses of variance from the SPSS MANOVA 6000 Update 8.0 program (Cohen and Buens, 1976) was applied to each of the 35 dependent variables generated by the questionnaire. Table 1 provides the F ratios and degrees of freedom for each of these significance tests for both CBT and CFT. Because of some missing data, the degrees of freedom for the error term differs somewhat for the different dependent variables. This discrepancy for degrees of freedom is most marked for the scale reflecting perceptions of attempts to exercise upward influence. These questions were answered only by subjects indicating that they had made an upward influence attempt during their summer training. Only one-fourth of the fourth class (Class of 1983) and two-thirds of the third class cadets (Class of 1982) reported making such an attempt. This subject mortality is not unduly small. There are very few opportunities for a new cadet in CBT to attempt to exercise upward influence.

## RESULTS AND DISCUSSION

In this section of the report, we describe our empirical findings, and where useful, relate these findings to the objectives of this study and the relevant literature. In presenting these results, we discuss first the Leader Gender main effects and then the Follower Gender main effects. Finally, we turn to the Leader Gender x Follower Gender interactions. In a final section of the report, we discuss the conclusions suggested by these many empirical findings. Before turning to discussion of specific findings, a brief discussion of generalization is in order. For the most part, we do not find con-

25

sistent patterns of results for the two training sites. Results characterizing CBT often do not replicate at CFT, and vice versa. For this reason, we have chosen not to combine the data from these two settings.\* Instead, we have conducted separate statistical tests on data from each setting. The reader should keep in mind the differences between these two training experiences while considering the results reported below.

#### 1. Leader Gender

Table 2 presents the means associated with all significant and marginally significant main effects for Leader Gender in both the CBT and CFT settings. The first column of this table provides the p level associated with each effect. Perhaps the most noteworthy general observation merited by the results presented in Tables 1 and 2 is that Leader Gender had relatively few effects on follower responses. In the Class of 1982 data, descriptive of the platoon leader for the administrative training detail for Cadet Field Training (CFT) at Camp Buckner, five variables showed significant or marginal ( $p < .10$ ) Leader Gender effects. In the Class of 1983 data, descriptive of the squad leader during Cadet Basic Training (CBT), two Leader Gender effects for CBT were marginally significant; none of the Leader Gender effects for CBT were marginally significant at the  $.05 \leq p \leq .10$  level. Furthermore, none of the effects for either CFT or CBT were particularly large in magnitude.

Below, we discuss the findings summarized in Table 2 under the

\*Note: In CFT, cadets are treated more collegually. In CBT, the artificial constraint of the 4th class system prohibits any fraternization between superior and subordinates. Thus, follower perceptions may have been contaminated by this strict scalar authority.

general headings of: follower satisfaction, communication, valence, bases of power, attributions, and contingent rewards and punishments. Follower satisfaction is an outcome measure comparing the success of male and female leaders while the other scores are process measures reflecting possible gender differences in the social exchange between leaders and followers.

#### Outcome Measures

Follower Satisfaction. In describing their experience as subordinates at CFT, members of the Class of 1982 indicated that they were more satisfied with their summer assignment and with the other members of their summer training unit when the unit leader was a male than when the unit leader was a female. A prior laboratory study of West Point cadets showed no overall effect of Leader Gender on follower morale (Rice, Bender and Vitters, 1980). Only when follower attitudes toward women was also considered did a significant effect emerge. Bender's (1978) review of the literature dealing with sex roles and leadership failed to detect any systematic trend for either male or female leaders to have more satisfied followers. The reasons for finding or failing to find gender effects on leadership outcome measures of this type are not well understood at the present time. However, one possible explanation is that gender is not as salient an issue after four years of coeducation as it was the first year. Still, the optimistic and promising change needs to be replicated.

#### Process Measures

Communication. One of the three communication scales yielded a marginally significant effect for Leader Gender among respondents

in the Class of 1982 when describing their administrative training detail platoon leader at CFT. Female leaders were described as being more open to attempts at upward communication by subordinates than were male leaders.

Valence of leader actions. The CBT and CFT settings yielded diametrically opposite Leader Gender effects regarding the valence subordinates attach to leader actions. In the CFT setting, subordinates indicated that they would feel worse following negative leader actions (reprimand, blame, bad report) and would feel better following positive leader actions (praise, respect, help) when such actions are carried out by a female leader than by a male leader. In the CBT setting, subordinates reported having stronger feelings about the positive or negative actions of male leaders than of female leaders. In CBT the subordinates are new plebes who are being socialized into the traditional masculine character of West Point and military training. Plebes in CBT are subjected to the fourth class system. Typical plebe responses are yes "sir," no "sir," and no excuse "sir." The training demands may simply favor a masculine role. Thus, the higher valence these subordinates attached to male leaders is not too surprising.

In CFT, the situational demands on cadets as followers is less structured. Also, the type of performance training may allow for more individualized expression of leader behavior.

Bases of power. One of the six bases of power questions yielded a significant effect for Leader Gender in the responses of the Class of 1982 as they described their CFT experience: information power.

These respondents indicated that they were more likely to comply with a female leader than a male leader because of the information the leader had available regarding the operation of the unit.

The lack of leader gender effects on the six bases of power was surprising, since numerous researchers have suggested that males and females differ in their access to and ability to wield power in an organization setting (Kanter, 1977; Johnson, 1978, Terborg, 1977). If females are less able to use certain power bases (e.g., referent and expert) as has been hypothesized, then one would expect followers to reflect the differences in the reasons they cite for compliance. Our results, however, suggest that followers comply with leader requests similarly, regardless of leader gender.

Attributions. Only one of the six attribution items yielded a significant effect as the Class of 1983 described their CBT experience; they indicated that the efforts of the unit members played more of a role for groups with male leaders than for groups with female leaders (recall that high scores mean that a particular factor is perceived as being a less important contributor to group performance). None of the attribution items yielded significant Leader Gender effects for the Class of 1982 data.

One possible reason for the paucity of significant Leader Gender effects in the attributional judgments is that we have not included attributes of the respondents in this analysis. The laboratory study of Rice, Bender, and Vitters (1980) also failed to find consistent attributional biases when examining Leader Gender main effects. However, a clear pattern of attribution effects did emerge when

follower attitudes toward women's roles in society were considered (i.e., Leader Gender x Follower Attitude interactions). The expected bias in attributional judgments was found among those subordinates endorsing attitudes reflecting a very traditional role for women (wife, mother, and homemaker). Among those respondents endorsing a more egalitarian role for women (i.e., equal educational, social, and vocational opportunities and responsibilities), there was a positive bias in attributional judgments; this group of followers made more favorable attributions for female leaders than for male leaders. Perhaps the failure to include follower attitudes in the present analyses is the cause of so few attribution effects related to Leader Gender.

Form of influence. The fact that none of the influence strategies yielded significant Leader Gender effects in either setting is a noteworthy negative finding. These particular strategies were generated on the basis of prior research that examined explicitly the difference in the ways that males and females attempt to influence others (e.g., Falbo, 1977; Johnson, 1978). We anticipated that the strategies described in the questionnaire would discriminate between male and female leaders. The failure to find such differences may reflect the overpowering demands of the leadership role. Perhaps the situational demands on cadets assuming the leadership role in summer training exercises wash out any differences in the strategies of influence generally used by males and females. The role demands may simply be so much stronger than the gender effects that this second class of effects is overpowered.

Falbo, Johnson and others have not generally considered specific roles in their analyses. Rather, they have examined general strategies used by males and females in their attempts to influence others. Consequently, their results may reflect sex role stereotypes and neglect situation specific norms for exercising social influence. In light of the present results, it seems important to move beyond this general analysis to examine influence strategies of males and females within the context of specific role relationships. The influence strategies differentiating males and females may well be situationally limited. And, as suggested by the present results, there may be certain situations where males and females do not differ substantially in the influence strategies they adopt.

## 2. Follower Gender

Table 3 presents the means associated with all significant or marginally significant main effects for Follower Gender. Again, the first column of this table reports the p level associated with each effect. In the Class of 1982 data, descriptive of leaders of the CFT administrative training detail, eight variables showed marginally significant effects (pg.10) of this type. In the Class of 1983 data, descriptive of squad leaders at CBT, the responses of male and female respondents were significantly different for four variables; the gender differences were marginally significant for two additional variables. Following the format adopted in presenting the Leader Gender effects, we will focus first on outcome measures and then shift attention to responses descriptive of leadership processes.

### Outcome Measures

Follower satisfaction. We have contradictory Follower Gender effects in the CFT and CBT settings. In the CFT setting, male subordinates in the Class of 1982 reported significantly higher levels of satisfaction with peers than did female subordinates. However, in the CBT setting, female subordinates were significantly more satisfied with their summer assignment than were male subordinates. There are many plausible interpretations one could offer for these data. One likely factor in the peer satisfaction effect is the minority status of women. Squads never have more than two or three women, leaving women outnumbered greatly by men. The lower level of peer satisfaction among women may reflect this minority status. The satisfaction with assignment effect is quite consistent with the data reported below showing that female cadets generally describe their training experiences in more favorable terms.

### Process Measures

Communication. In the CFT setting, male respondents in the Class of 1982 reported that their leaders were significantly more receptive to upward communication than did female respondents. This effect is consistent with the sex-role stereotype of men being bold and assertive. Consistent with such a stereotype, the male cadets at CFT report feeling more confident and at ease in communicating with someone higher in the organizational hierarchy.

Valence. The valence variable yielded similar results in both the CBT and CFT settings. Female subordinates reported that the actions of their unit leaders had greater personal valence for them than did male subordinates. That is, male subordinates, relative

to female subordinates, reported that they would feel worse about punitive actions by their leader and feel better about rewarding actions. Such a result is in keeping with the stereotypic view that females experience emotions in a more deep-felt fashion than do males, or at least that they express their emotions more openly.

Outcome. The Follower Gender effect was marginally significant for the scale concerning description of attempts to influence persons higher up in the chain of command. Females reported more positive experiences of this type than did males. This effect was for the Class of 1983 at CBT.

Bases of power. Two of the six bases of power items yielded significant effects in the CBT setting and three of these items yielded significant or marginally significant effects in the CFT setting. In both CBT and CFT, female subordinates, relative to male subordinates, were more likely to report that they complied with their leader's demands because of the special information held by him/her (information power). In the CFT setting, subordinates in the Class of 1982 also showed gender effects on referent power and expert power (the effect was only marginally significant for expert power). For both of these items, females indicated that they complied with their leader's requests for these reasons more than did males. Finally, in the CBT setting, male subordinates in the Class of 1983 indicated that they complied more because of fears of retribution (coercive power) than did the female subordinates in this class.

The results for both training sites, when taken together, yield an interesting pattern concerning the bases of power. Females complied more often because of the personal bases of power controlled

by their leader (referent and expert). Conversely, males complied more often because of a positionally empowered (or role-provided) bases of power: coercive power. The last base of power, information, is difficult to classify. It seems to be organizationally endowed, but it is far more positive than the other forms of positional power. Given the apparently positive connotation of this power base, it seems reasonable to find that it is females who report complying with their leader for this reason to a greater extent than males. In short, these results suggest that female subordinates perceive the power bases of their leaders more favorably than do male subordinates.

Contingent rewards and punishments. Two of the four items dealing with perceptions of the relationship between subordinate performance and leader actions yielded Follower Gender effects. In both cases female subordinates described leader contingencies in a more positive manner. Female subordinates in the Class of 1982, relative to their male counterparts, indicated that their CFT leaders less frequently engaged in negative, punishing acts following poor performance by the unit. In the CBT setting, female subordinates in the Class of 1983, relative to their male counterparts, reported that above average unit performance was more often followed by positive leader actions (this effect was only marginally significant). These descriptions by female subordinates regarding the leader administration of rewards and punishments are consistent with the bases of power data considered previously. In both cases, female subordinates are more positive than male subordinates in their descriptions of unit

leaders (i.e., more positive bases of power and more positive use of rewards and punishments).

Influence strategies. In describing their CFT experience, male and female subordinates in the Class of 1982 had significant or marginally significant differences in responses to five of the nine influence strategy items. There was a quite clear and consistent pattern for these effects; female subordinates were more positive than male subordinates in their descriptions of how their unit leader wielded influence in the group. All five items that were significant or marginally significant described a somewhat negative or inappropriate strategy for gaining influence: making demands without providing any rationale, hinting and otherwise being indirect, using ingratiating tactics, using personal punishment, and pleading helplessness (asking for subordinates compliance as a way of helping the leader). Male subordinates indicated that their leaders made more frequent use of each of these five strategies than did female subordinates in describing their leaders. In short, female subordinates portrayed a more positive picture of leader influence than did male subordinates. The positive flavor of these descriptions is fully consistent with the positive tenor of bases of power and use of rewards and punishments already noted.

### 3. Leader Gender x Follower Gender Interactions

Table 4 presents the means associated with all significant or marginally significant interaction effects involving Leader Gender and Follower Gender. In the Class of 1982 data, descriptive of the CFT administrative training detail, none of the 35 dependent variables

yielded significant or marginally significant effects of this type. In the CBT data collected from the Class of 1983, two such effects were significant and two additional variables approached significance. Below we describe these effects.

#### Outcome Measures

Follower satisfaction. The significant interaction for satisfaction with leader indicates that the female leader-female subordinate condition was quite discrepant from the other three conditions (see Table 4). The lowest level of follower satisfaction with the unit leader was when both leader and follower were females. The small sample size for this group requires restraint in interpreting this effect ( $n=4$ ). However, the direction of this effect is interesting as it runs opposite to the intuitive notion that females would be supportive of one another when in such roles. Perhaps the negative reaction of female followers reflects the "queen bee" phenomena discussed by Staines, et al. (1973).

#### Process Measures

Communication. In describing the adequacy of downward communication from unit leader to subordinate, the female leader-female follower condition stands out as being less adequate than the other three leader gender-follower gender combinations (see Table 4). This effect parallels directly the follower satisfaction with leader data discussed above.

Attributions. The attribution item concerning beliefs that hard work on the part of the unit contributed to group performance also showed the female leader-female follower groups to be unique.

In this condition, female followers reported that unit effort played less of a contributing role than did followers in the other three conditions (see Table 4). Remember that low scores reflect a high level of contribution on the attribution items.

Influence strategy. The female leader-female subordinates condition was also unique from the other three conditions in responding to the item dealing with use of indirect requests. Female followers reported that female leaders used this strategy less frequently than did subordinates in the other three leader gender-follower gender conditions (see Table 4).

#### CONCLUSIONS

The data reported here are equally noteworthy for both the absence of certain effects as for the presence of others. Generally, the gender of the respondent was a stronger determinant of questionnaire responses than was the gender of the leader being described. This, in itself, was surprising in light of how much has been said about gender being better viewed as a stimulus property than a subject property (e.g., Grady, 1979). Still more surprising to us was the almost total absence of interaction effects involving gender of subordinate and gender of the leader. In this concluding section, we discuss some of the implications suggested by these results.

#### Leader Gender

At least in the present settings, gender of the leader is not a strong determinant of either measures of leadership success or measures descriptive of leadership process. Male leaders, relative to female leaders, had subordinates who were:

-- more satisfied with their summer assignment

-- more satisfied with their peers

Females leaders, relative to male leaders, were described by their subordinates as:

-- more open to upward communication

-- having rewards and punishments with greater valence

-- eliciting greater compliance on the basis of information power

-- leading groups where hard work by subordinates is more of a contributor to group performance

The valence factor yielded contradictory findings in the two settings, with male leaders having punishments and rewards with greater valence at CBT and the actions of female leaders having more valence at CFT. Thus, in summary, we have outcome scores (follower satisfaction) favoring male leaders and process descriptions more favorable to female leaders.

The higher scores for male leaders on the two follower satisfaction scores are consistent with two prior studies of gender and leadership success at West Point (Rice, Bender and Vitters, 1980; Rice, Yoder, Adams, Priest and Prince, 1980). The first of these studies showed male-led groups to perform significantly more effectively in terms of objectively scored tasks used in a laboratory experiment. The second study showed that male cadets were rated significantly higher in leadership ability by fellow cadets and supervising Army officers than were female cadets. While the present study shows no difference in ratings of leader or unit effectiveness, male leaders were more successful in terms of follower satisfaction

(but only at CBT). However, as in our prior research at the Academy, these effects are of a small magnitude and reach statistical significance only because of the large sample sizes involved. No more than five percent of the variance was associated with any of these Leader Gender effects.

As 35 dependent variables were tested for leader gender effects in each of the two settings (a total of 70 such tests), the seven effects reaching the  $p < .10$  level must be interpreted with great caution. By chance alone, one would expect seven effects to be significant at this level (i.e., 10%).

Given this general paucity of leader gender effects, the theoretical perspectives guiding our selection of measures for this study were not strongly supported. Gender differences in access to personal and positional forms of power were significant only for one of the six bases of power. The gender differences in forms of social influence suggested by the research of Falbo (1977) and Johnson (1978) received no support at all; none of our nine items dealing with influence strategies yielded significant effects for leader gender. Finally, the gender bias suggested by Deaux (1976) in her work on attributions and sex roles was not supported. The general propositions that effective leaders communicate well with subordinates (Katz and Kahn, 1978) and motivate their subordinates (the path goal theory of leadership, House and Mitchell, 1974) did not really provide specific hypotheses tested by these analyses. However, the types of process measures suggested by these orientations were not very illuminating of leader gender effects. Only one of our communication scales yielded even a marginal effect. Similarly, only one of the motivation scales showed significant effects.

In attempting to explain the general lack of leader gender effects, we look to the equivalence of training for male and female leaders and the highly structured nature of the leader's role in these settings. Contrary to the situation faced by most civilian and military organizations, the male and female cadet leaders at West Point have virtually identical backgrounds in terms of experience and preparation for the leader role. The Academy policy of strict equivalence of training regimen for male and female cadets is the reason behind this equivalence of preparation. In many organizations, females have had less relevant experience because of sexist policies regarding selection and promotion. As a result, females are often at a disadvantage when compared to the performance of males. However, such appears not to be the case in the leadership roles provided by the training environments at CBT and CFT. In these situations, it appears that the gender of the leader is not a particularly important variable (at least as reflected in questionnaire responses of followers).

The small number of leader gender effects may also reflect the high degree of structure in the leader role for the settings studied. At both CBT and CFT, the activities of trainees are highly structured. Activities for virtually every hour of the day are planned before the onset of training. Within such a structured setting, the latitude of the cadets in leadership roles is necessarily quite limited. Such restrictions might prevent any form of individual differences among leaders from being strongly reflected in differences in either outcome or process measures of leadership. The notion proposed here can be stated quite simply in the following manner: Males and

females may generally differ in the effectiveness and style of their leadership, but the structure provided at CBT and CFT may prevent such differences from being expressed.

#### Follower Gender

The gender of the followers responding to our questionnaire provided a number of interesting effects. Generally, these effects showed that female cadets had a more positive reaction to their training experience. For example, female respondents, relative to male respondents, described their unit leader as:

- relying more on positive forms of social power (expert, informational, and referent).
- relying more on negative forms of social power (coercive)
- more often rewarding good unit performance
- less often punishing poor performance
- less frequently using aversive strategies of influence (e.g., ingratiation, pleading helplessness, failing to provide any rationale)

Females subordinates were also more satisfied with their summer assignment. In contrast to the generally more favorable responses of females, the male respondents reported:

- greater ease in communicating upward to their unit leader.

Despite these general differences in the favorableness with which unit leaders were described, male respondents, relative to female respondents, reported on the questionnaire that they were more satisfied with their peers.

As suggested earlier, these gender of respondent differences were surprisingly numerous. Furthermore, they were not of central interest to either the Summer Leadership Study or the present report. However, we must reckon with the fact that gender of follower was a stronger determinant of questionnaire responses than was gender of leader. Perhaps with regard to leadership phenomena, the effect of gender as a subject characteristic is stronger than believed to be the case generally (Grady, 1979). Whatever its cause, the frequency and magnitude of these effects cannot be ignored.

There is one serious difficulty facing any effort to interpret data comparing the way males and females describe their experiences as we have done with our summer training questionnaire. Differences in the responses of male and female subordinates on such questionnaire items may reflect important differences in the quality of leader-follower interactions as a function of follower gender. Alternatively, such Follower Gender effects may reflect differences in the way male and female subordinates perceive and react to leader-follower interactions of similar quality. From this second perspective, the locus of Follower Gender effects is not in objectively different interaction patterns experienced by male and female subordinates. Rather, the locus of such effects would be attributable to the differences in values, attitudes, beliefs, and prior experience that males and females bring to this particular setting. Because we have no objective descriptions of leader-follower processes, we cannot choose between these two alternatives on empirical grounds. Our best guess at this time is that both interpretations have some validity.

Probably the differences in responses of male and female cadets reflect both differences in the immediate experience of males and females in these training settings and the differences in the way males and females perceive similar experiences. Because of this inherent interpretation problem in the type of data analyzed here, we have done little in the way of interpretation or speculation regarding Follower Gender effects. Far more discussion of the Leader Gender effects was offered because they were not open to this particular problem of interpretation. One can argue that Leader Gender difference may reflect stereotypic biases rather than differences in experience with male and female leaders. However, whatever the cause, such differences do still reflect differences in the reactions elicited by male and female leaders.

#### Leader-Follower Interactions

We were surprised by the absence of much in the way of interactions between Leader Gender and Follower Gender as determinants of follower responses. Of the 70 tests for statistically significant effects of this type (35 in each of the two training settings), we actually found somewhat fewer significant effects than we would expect by chance alone. Using alpha of .10, 7 effects would be expected by chance and we found only four such effects. Apparently, at least in these settings, there is not much that is unique or special about the different possible combinations of Leader Gender and Follower Gender.

It is always difficult and dangerous to assign much meaning to non-significant results. However, for the present data, at least two

factors give special significance to failures to reject the null hypothesis. First, most of our multi-item scales are quite reliable. Thus, we cannot attribute the failure to find significant differences, at least on these variables, to unreliability in measurement. Second, our sample sizes are substantial, thereby enhancing the statistical power of our hypothesis testing. This argument is especially strong with regard to main effect comparisons of male and female leaders or male and female followers. With regard to interaction effects, one cell does have consistently small samples: female leader-female follower. And as discussed previously, this condition was consistently deviant from the other three combinations of leader and follower gender in the few variables yielding significant results.

In trying to provide a meaningful interpretation of the failure to find interactive effects, two ideas come to mind. First, the high degree of structure in these situations, mentioned previously as a possible reason for few Leader Gender effects, may also be the reason behind an absence of interactions. In less rigidly programmed environments, different combinations of leader gender and follower gender may create some unique interaction patterns that would be reflected in analyses of the type conducted here. However, with highly structured patterns of activity for both leaders and followers, as is found in CBT and CFT, such gender based dyadic effects do not express themselves.

The second possible explanation of so few interaction effects considers the absolute number of dyads with the different possible gender combinations. Our principal, but unstated interest in these analyses was upon the female leader-female follower dyads. West Point has been a traditionally male environment, and even after

sexual integration, the Corps of Cadets has less than 10% females. Being in a clear minority status, we thought that female-female dyads might sense a special feeling of comraderie and support. However, such "chemistry" in those dyads was not reflected in the data; if anything, just the opposite effects were found. It may be that any unique interaction patterns that females may initiate in leader-follower roles are overwhelmed by majority values and majority behavior patterns. That is, female leaders may feel pressured to behave in a masculine fashion even toward female subordinates because a feminine form of interaction is not legitimized by the informal and formal norms of the institution. At this point, we are not suggesting what "masculine" and "feminine" forms of interaction might look like. We are simply suggesting that the minority status of females may have suppressed the expression of stereotypically feminine forms of interaction. Instead, females adopted the stereotypically masculine form of interaction that dominates the institution. The speculative nature of this interpretation cannot be overstated. However, it is consistent with descriptions of female roles in traditionally male groups in business settings (Henning and Jardim, 1977; Wolman and Frank, 1975).

#### LIMITATIONS

The absolute number of females in both leader and follower roles introduces a serious limitation to the present effort to compare male and female leaders. Units in the present study had no more than two or three females. Thus, our comparisons of reactions to male and female leaders are limited to mixed-sex groups where females are a

distinct minority. We could not examine all female or even predominantly female groups in these settings. Our data tell us nothing about possible differences in the reactions elicited by male and female leaders in such groups. Further research conducted in other settings, is needed to examine such issues. It is entirely possible that leadership dynamics associated with gender, especially in the form of interactions involving leader gender and follower, can express themselves most strongly when gender is more evenly distributed.

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Table 1

## Leader Gender x Follower Gender ANOVA F Ratios and Degrees of Freedom

	CFT (Class of 1983)			CFT (Class of 1982)		
	Follower Gender (F)	Leader Gender (L)	F x L	Follower Gender (F)	Leader Gender (L)	F x L
Leader Effectiveness	.07(1,752)	.67	.00	.08(1,780)	.94	2.09
Unit Effectiveness	1.78(1,762)	.17	.03	1.04(1,826)	1.75	.01
Downward Communication Content	.20(1,664)	.02	3.28 <sup>a</sup>	.03(1,620)	1.66	1.63
Downward Communication Quality	.30(1,767)	.10	.52	.51(1,827)	.65	.01
Communication Upward	.76(1,769)	.10	.02	5.12**(1,823)	3.48 <sup>a</sup>	.34
Satisfaction with Assignment	5.74*(1,766)	.16	1.46	.15(1,822)	6.27**	1.84
Satisfaction with Peers	.02(1,770)	.00	.28	9.70**(1,829)	8.86**	.23
Satisfaction with the Leader	.22(1,758)	.76	3.82 <sup>a</sup>	.61(1,822)	.02	.81
Valence of Leader Actions	10.68**(1,766)	6.68**	1.27	12.51***(1,814)	4.83*	.12
Outcome of Upward Influence	2.67 <sup>a</sup> (1,190)	1.16	.09	2.00(1,545)	1.03	.16
<b>Bases of Social Power:</b>						
referent	.17(1,771)	.10	1.99	6.75**(1,828)	.62	.78
expert	.46(1,771)	.01	1.45	3.54 <sup>a</sup> (1,832)	.00	1.39
reward	2.52(1,770)	.06	1.42	.93(1,828)	1.90	.74
coercion	8.51**(1,767)	.76	.02	1.10(1,829)	.06	.86
legitimate	.41(1,770)	2.23	.25	1.31(1,829)	1.68	1.74
informational	5.01*(1,769)	1.29	2.49	12.95***(1,830)	5.05*	1.07
<b>Causal Attributions:</b>						
Leader skill	.48(1,741)	.00	.15	2.27(1,805)	.00	.02
Unit skill	.97(1,653)	1.48	.18	2.02(1,794)	1.78	.36
Leader work	.00(1,745)	.36	1.04	.85(1,808)	.47	.02

Table 1 (continued)

	CBT (Class of 1933)			CFT (Class of 1962)		
	Follower Gender (F)	Leader Gender (L)	F x L	Follower Gender (F)	Leader Gender (L)	F x L
Unit work	.77(1,709)	5.44*	4.78*	.47(1,803)	.43	.32
Good luck	.00(1,567)	1.25	1.04	.24(1,635)	1.35	.06
Bad luck	.35(1,553)	.00	1.20	.49(1,617)	.21	1.54
<b>Contingent Reward/Punishment:</b>						
Excellence-rewarded	.75(1,750)	.76	1.22	.16(1,801)	2.49	.00
Poor-negative acts	2.21(1,751)	.72	.35	4.08**(1,793)	.07	.47
Above average-rewarded	2.67 <sup>a</sup> (1,753)	.00	.20	.03(1,791)	.74	.34
Below average-rewarded	2.25(1,741)	.09	.40	1.41(1,769)	.52	.80
<b>Influence Strategies:</b>						
direct without rationale	1.20(1,735)	.10	.18	3.25 <sup>a</sup> (1,803)	.88	.11
direct expertise	.13(1,713)	.10	.02	1.61(1,772)	.16	.02
direct with rationale	.54(1,758)	.00	.85	.21(1,793)	1.62	.02
indirect	.00(1,683)	.01	3.40 <sup>a</sup>	4.03*(1,738)	.03	.68
direct threats	2.63(1,733)	.66	.09	1.51(1,794)	.00	.37
ingratiation	.13(1,691)	.32	.01	8.59** <sup>b</sup> (1,755)	1.99	1.27
personal punishment	.51(1,713)	.18	.09	2.75 <sup>a</sup> (1,740)	1.08	.30
personal reward	.20(1,685)	.04	1.28	.88(1,750)	.01	.01
helplessness	1.54(1,632)	.63	.01	3.54 <sup>c</sup> (1,773)	.25	2.22

Levels of Significance: <sup>a</sup>p<.10, <sup>\*</sup>p<.05, <sup>\*\*</sup>p<.01, <sup>\*\*\*</sup>p<.001

Table 2  
Leader Gender Main Effects

Dependent Variable	CBT (Class of 1983)				GFT (Class of 1982)				
	Female	Male	Female	Male	Female	Male	Female	Male	
	<u>n</u>	<u><math>\bar{X}</math></u>	<u>n</u>	<u><math>\bar{X}</math></u>		<u>n</u>	<u><math>\bar{X}</math></u>	<u>n</u>	<u><math>\bar{X}</math></u>
Upward Communication	.76	10.66	64	10.81	709	.06	12.59	113	11.97
Satisfaction with Assignment	.69	13.75	64	13.91	706	.01	11.70	113	12.44
Satisfaction with Peers	.96	9.8	64	9.78	710	.00	9.12	111	9.73
Valence of Leader Acts	.01	34.84	64	35.94	705	.03	35.05	109	34.16
Bases of Social Power									
Informational	.26	4.00	64	3.87	709	.02	3.56	112	3.32
Causal Attributions									
unit work	.02	1.82	60	1.59	653	.51	1.60	109	1.54
									.698

Table 3  
Follower Gender Effects

Dependent Variable	CBT (Class of 1983)				CRT (Class of 1982)			
	Female	Male	$\bar{X}$	n	Female	Male	$\bar{X}$	n
Upward Communication	.38	11.08	86	10.76	.687	.02	11.26	73
Satisfaction with Assignment	.02	14.49	35	13.83	.685	.70	12.47	73
Satisfaction with Peers	.89	9.75	86	9.79	.638	.00	8.95	75
Valence of Leader Acts	.00	36.88	85	35.72	.685	.00	35.85	73
Outcome of Upward Influence	.10	21.47	26	20.59	.168	.16	20.49	31
<i>Bases of Social Power</i>								
referent	.68	4.12	86	4.07	.639	.01	3.80	75
expert	.50	4.25	86	4.18	.689	.06	3.35	75
coercion	.00	2.72	85	3.17	.626	.30	2.37	74
informational	.03	4.11	85	3.85	.688	.00	3.78	75
<i>Contingent Reward/Punishment</i>								
poor-negative acts	.14	2.90	82	3.13	.673	.04	2.49	70
above-average rewarded	.10	3.54	84	3.34	.673	.87	3.01	70
<i>Infl. on Strategic</i>								
direct without rationale	.27	3.11	82	3.21	.656	.07	2.92	73
indirect	.95	2.24	75	2.25	.612	.05	2.14	66
intimidation	.72	1.40	75	1.44	.620	.00	1.64	67
personal punishment	.47	1.47	80	1.55	.637	.10	1.79	66
helplessness	.21	1.93	70	2.12	.566	.06	2.94	68

**Table 4**  
**Leader Gender x Follower Gender Interactions\***

CBT (Class of 1983)											
<u>Leader Sex:</u>		Male			Female			<u>Female</u>			
<u>Follower Sex:</u>		Male	Female	Male	Female	Male	Female	Male	Female	Female	
<u>Dependent Variable</u>	<u>p</u>	<u><math>\bar{X}</math></u>	<u>n</u>								
Downward Communication Content	.07	12.26	537	12.25	75	12.44	52	10.50	4		
Satisfaction with the Leader	.05	18.27	618	18.61	60	18.12	60	15.00	4		
Causal Attributions											
unit work	.03	1.60	577	1.49	76	1.77	56	2.50	4		
Influence Strategies											
indirect	.066	2.24	555	2.30	71	2.33	57	1.25	4		

\*There were no significant interaction effects for CFT (Class of 1982).

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Technical Report 80-3

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The 1979 Summer Leadership Study:  
Correlates of Leadership Success for  
Male and Female Leaders

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776 West Point cadets undergoing Cadet Basic Training (CBT) and 842 cadets in Cadet Field Training (CFT) completed a questionnaire describing and evaluating their unit leader. The questionnaire included measures of unit and leader effectiveness, various facets of cadet satisfaction, communication, motivation, upward influence efforts, attributions of performance, bases of social power, contingent administration of rewards and punishments, and strategies of social influence. Correlations between criteria of leader success (effectiveness and satisfaction) and descriptions of leadership process (communication, motivation, social power, etc.) were calculated separately for cadets with male leaders and those with female leaders. Relatively few of the correlations for female-led and male-led cadets were significantly different from each other. However, these few differences did fit together to suggest unique means by which female and male leaders become effective. The more common result was for the correlations to be similar for female and male leaders. These results were discussed in light of several general areas of leadership research. Because all the data for this study were taken from a single questionnaire completed by subordinates, and alternative interpretation for these results can be offered in terms of implicit theories of leadership.

The 1979 Summer Leadership Study:  
Correlates of Leadership Success for  
Male and Female Leaders

The present report examines the correlates of leadership success for male and female cadets in leadership roles during summer training programs at the U.S. Military Academy. Selected cadets in the Class of 1980 and 1981 served in the leadership cadre for Cadet Basic Training (CBT) or Cadet Field Training (CFT) during the summer of 1979. The subordinates during this training period were members of the Class of 1982 (CFT) and the Class of 1983 (CBT). Following their training, cadets in the classes of 1982 and 1983 completed a questionnaire in which they described, from the perspective of subordinates, the leader-follower relationship for their summer training unit. Their responses to this questionnaire provide the data analyzed for the present report. The analyses reported here address the following question: Through what leadership processes are male and female leaders effective (as defined by important outcome measures)? To examine this question, we have correlated subordinate evaluations of leader success with descriptions of leadership process taken from the same questionnaire; these correlations were calculated separately for male and female leaders.

In her review of research on women and leadership, Bender (1978) reported that little research has considered the question of interest for the present report. There is now a substantial body of empirical

research comparing male and female leaders in terms of process measures (e.g., leader behavior scores on initiating structure or consideration) or criterion measures reflecting leadership effectiveness (e.g., subordinate satisfaction, supervisor ratings of leader performance). However, little of this research has been concerned with the correlation between criterion and process measures for both male and female leaders. By making such a comparison, one can examine the possibility that males and females use different means to be effective (or ineffective) leaders. It is to this issue that the present report is addressed.

#### METHOD

Our previous technical report describes in detail the procedures of the 1979 Summer Leadership Study (Technical Report 80-1, "The 1979 Summer Leadership Study: Procedures and Descriptive Analyses of the Basic Questionnaire," Adams, Rice, Instone and Prince, 1980). For the present report, we provide a brief review of the procedures.

#### Subjects

Cadets at the U.S. Military Academy in leader and trainee roles at CFT and CBT are the subjects of concern for this particular report of the 1979 Summer Leadership Study. At CBT, we have usable responses from 690 males and 86 females; 712 of these cadets described a male squad leader and 64 described a female squad leader. At CFT, 767 males and 75 females provided usable responses to the questionnaire; 727 described a male administrative training detail platoon leader and 115 described a female.

### Questionnaire Administration

During reorganization week in August 1979, cadets in the Class of 1982 completed a questionnaire in which they described their administrative training detail leader during CFT. In October 1979, cadets from the Class of 1983 completed the same questionnaire (with a few additional items); these cadets described the leader-follower relationship that existed between themselves and their CBT training detail squad leader.

The questionnaire assessed both leadership success (an outcome) and leadership process (the activities of leaders and followers). Following the suggestion of Korman (1971), we used two major classes of criterion variables reflecting leadership success; subordinates satisfaction and performance effectiveness. In addition, the questionnaire contained a large number of items designed to assess various aspects of the processes comprising the interpersonal relationship between leaders and followers. Below, we list the specific measures into these general categories. Our previous report presents reliability data on each of these variables.

<u>Abbreviated Variable Name</u>	<u>No. of Items</u>	<u>Description of Variable</u>
<b>Criterion Measures:</b>		
ZLEFFCT	3	subordinate's perception of the leader's effectiveness in performing leadership duties
ZUEFFCT	2	subordinate's perception of the unit's effectiveness in performing assigned tasks

<u>Abbreviated Variable Name</u>	<u>No. of Items</u>	<u>Description of Variable</u>
ASATISF	3	subordinate's satisfaction with the summer training assignment
PSATISF	2	subordinate's satisfaction with the other cadets (peers) in the summer training unit
LSATISF	4	subordinate's satisfaction with the leader of the summer training unit
<b>Process Measures:</b>		
CCONTENT	5	subordinate's perception of the effectiveness of downward communication regarding five specific content areas
CQUALITY	4	subordinate's judgments of the quality of downward communication on four dimensions (accuracy, timeliness, amount, and adequacy of information provided)
CUPWARD	3	subordinate's perception of the receptivity of leaders to upward communication from subordinates
attributions	6	six items tapping beliefs about the degree to which different factors were the cause of unit performance
bases of power	6	six items tapping different bases of power as reasons for complying with the orders and suggestions of the unit leader
contingencies	4	four items tapping the frequency with which rewards and/or punishments were administered contingent on the level of performance
influence strategies	9	nine items tapping the frequency with which leaders used various strategies for influencing subordinates

#### ANALYSIS

Correlations were calculated between the five criterion measures and each of the 30 process measures. These correlations were calculated separately for subordinates with male or female leaders. The

significance of differences between these correlations for male and female leaders was assessed using the  $z$  test technique described by Guilford (1965, pp. 189-191). The usual test of significance for individual correlation coefficients determine the likelihood that a given correlation is different from zero. The test described by Guilford determines the probability that two correlations are different from one another.

#### RESULTS AND DISCUSSION

In this section of the report, we describe our empirical findings and, where useful, relate these findings to relevant theory and research. In presenting these results, we include analyses from both CBT and CFT. We present first the intercorrelations among the five criteria of leader effectiveness: subordinate perceptions of leader and unit effectiveness, subordinate satisfaction with leader, summer assignment, and peers in their summer training unit. We then describe the correlates of each criterion score.

##### 1. Intercorrelations Among Criteria

Tables 1 and 2 present the intercorrelations among our five criterion scores for CFT and CBT, respectively. In each of these tables, the correlations are reported separately for male and female leaders. The correlations above the principal diagonal are for female leaders and those below the principal diagonal are for male leaders.

The intercorrelations among the five criterion scores are often substantial for both male-led groups in both CFT and CBT settings.

Especially strong are the correlations among ratings of leader effectiveness, unit effectiveness, and satisfaction with leader. Responses to each of these three measures seem to be tapping a general evaluation of formal group functioning. The one exception to this general statement regarding these three measures occurs in female-led groups at CBT; here the correlation between ratings of leader and unit effectiveness was only .24. For both CFT and CBT, satisfaction with peers and satisfaction with summer assignment are relatively independent of one another and the other three criteria already discussed. The major exception to this second generalization involves satisfaction with leader; this criterion is correlated substantially with summer assignment satisfaction.

Based on the data presented in Tables 1 and 2, we would expect to find considerable similarity in the correlates of the three measures reflecting evaluation of unit and leader functioning (satisfaction with leader, leader effectiveness, and unit effectiveness). Somewhat different patterns of correlates would be expected for the other two criteria: satisfaction with summer assignment and satisfaction with peers. As shown by the results presented in Tables 3-12, our several measures of leadership processes are more strongly correlated with these first three criterion scores than with the last two.

## 2. Leader Effectiveness

Tables 3 and 4 present the correlates of follower reports of leader effectiveness for male and female leaders for CFT and CBT settings, respectively.

CPT. Exempting momentarily possible gender differences, Table 3 suggests that effective leaders at CPT, relative to less effective leaders:

- communicate downward more effectively
- are more receptive to upward communication
- elicit greater compliance because of personal bases of power (referent and expert)
- elicit stronger leader-based attributions regarding reasons for unit performance (leader skill and hard work)
- more frequently provide rewards for good performance and respond constructively to poor performance
- more frequently influence subordinates by accompanying direct requests with a rationale and less frequently use aversive strategies of influence such as threats or giving directions without any rationale.

These generalities are supported by correlations that are statistically significant and in almost all cases exceed .30 in magnitude. For the strongest of these effects, the correlations are in the .50's.

CBT. Looking at Table 4, there is strong similarity in the pattern of the correlates of leader effectiveness ratings at CBT and CPT. Only two differences between the results of CFT and CBT stand out. First, the magnitude of the correlations is generally lower for the CBT data. Second, receptiveness to upward communication is less strongly correlated with effectiveness ratings at CBT than are either of the two scores for downward communication. By contrast, upward and downward communication are about equally correlated with perceived effectiveness in the CFT setting. This pattern probably reflects the peculiar nature of the CBT setting. Stress is deliberately introduced in this setting by limiting upward communication. The plebes

are not allowed to initiate communication with their squad leader except under highly restricted conditions. Also, their forms of response are limited.

Gender effects. In both Tables 3 and 4, the significance of the differences between correlations for male and female leaders is identified in the final column. For several variables, these differences between correlations are significant at  $p < .05$ . For CFT, seven pairs of correlations were significantly different. For CBT, four pairs of correlations were significantly different. Only one variable yielded significantly different correlations in both settings: attributions regarding the contribution of leader skill.

In the CFT setting, the following variables correlated more strongly with follower ratings of leader effectiveness for respondents with male leaders than for respondents with female leaders:

- compliance because of referent power
- attributions that leader hard work and leader skill contributed greatly to unit performance
- poor unit performance followed by negative leader actions (negative r)
- use of ingratiation or personal punishment as influence strategy (negative r)

Conversely, the correlation was stronger for subordinates in female-led groups than in male-led groups for the outcome of upward influence variable.

In the CBT setting, the following variables yielded stronger correlations for subordinates in male-led groups:

- attribution that leader skill contributed greatly to unit performance
- excellent unit performance followed by positive leader actions

The other two differences between correlations that achieved significance in this setting showed higher correlations for female-led subordinates. These two variables were:

- compliance because of information power
- use of helplessness as influence strategy

The general tenor of these results is one that reflects more favorably on male leaders. Male leaders are seen as being effective because of leadership skill, personal qualities (referent power), using contingent rewards, avoiding negative strategies of influence. This profile has strength and positive affect on its tone. The female profile is much less favorable with information being the power base and requests for personal help being the strategy for social influence.

### 3. Satisfaction with Leader

Tables 5 and 6 present the correlates of subordinate reports of satisfaction with the leader of their summer unit at either CFT or CBT. The format of these tables, and of all tables to follow, is identical to that used with the previously discussed tables (3 and 4).

Given the substantial correlations between subordinates ratings of leader effectiveness and reports of satisfaction with leader in both training sites (see Tables 1 and 2), we would expect similar patterns of correlations between each of these variables and other measures. A comparison of Tables 3 and 4 with Tables 5 and 6 reveals a high degree of similarity.

CFT. If we were to list a profile of the factors most strongly correlated with satisfaction with leader at CFT it would be identical

to the profile listed on p.6 for the criterion of leader effectiveness. An examination of Table 5 shows that followers apparently report greater satisfaction with their leader for the same reasons that they rate their leader as being more effective (good downward and upward communication, reliance on personal power bases, leader-based attributions, etc.). The only difference between results in Tables 3 and 5 is that the magnitude of the correlations are generally a bit stronger for the satisfaction with leader criterion.

CBT. Table 6 presents the correlates of satisfaction with squad leader at CBT. There is generally a strong correspondence between the results presented here and the results presented earlier for the effectiveness of CBT squad leader (Table 4). In general, the correlations are stronger for the satisfaction criterion than was the case for the effectiveness criterion (comparing Tables 4 and 6). Perhaps the most striking difference between the correlates of these two criteria concern upward communication. Followers were most satisfied with their squad leader when he/she was receptive to upward communication ( $r = .52$  for male leaders and  $r = .62$  for female leaders). As noted previously, the upward communication factor was not as strongly related to ratings of leader effectiveness at CBT as was downward communication ( $r = .34$  and  $r = .16$  for male and female leaders respectively).

The correspondence in correlates of satisfaction with leader is quite strong for the two training sites. Comparison of Tables 5 and 6 shows that factors associated with high satisfaction with leader in CFT are also generally associated with this criterion in CBT.

Gender effects. As shown in Tables 5 and 6, none of the differences between correlations for male-led and female-led subordinates

were significant in either CFT or CBT when the criterion of leader success was satisfaction with leader.

#### 4. Unit Effectiveness

Tables 7 and 8 present the correlates of follower reports of the effectiveness of units led by males and females at CFT and CBT, respectively.

CFT. Not considering possible gender differences, the results presented in Table 7 suggest that leaders of more effective units, relative to units that were rated as less effective:

- communicate downward more effectively
- are more receptive to upward communication
- elicit greater compliance because of personal bases of power (referent and expert power)
- elicit stronger leader-based attributions regarding reasons for unit performance (leader hard work and leader skill)
- more frequently provide rewards for good performance and constructive responses to poor performance
- more frequently influence subordinates by accompanying direct requests with a rationale and less frequently use other more aversive strategies of influence such as threats, personal punishments, or giving directions without any rationale.

This profile is identical to that suggested by the correlates of leader effectiveness at CFT; the only differences are that the correlations with the unit effectiveness tend to be somewhat lower than the correlations with leader effectiveness. McGrath and Altman (1966) provide a reasonable explanation of these generally weaker results in terms of their concept of operational concordance. They provide strong evidence showing that the likelihood of a significant statistical relationship between two variables is related to the

operational similarity of the methods used to collect data for each variable. The "object" of the data is a central operational property in their system. In the present study, the object of most of the questionnaire variables is the leader (his/her communication patterns, bases of power, valence of different actions, etc.). In support of McGrath and Altman's principle of operational concordance, these measures of the leader's actions are more strongly related to a direct measure of leader effectiveness than to a measure of unit effectiveness. Presumably, many non-leader factors also influence unit effectiveness.

Gender effects. In only one case were the pairs of correlations for male-led and female-led subordinates shown in Tables 7 and 8 significantly different. In the CFT setting, male-led units were rated as more effective when the leader infrequently followed poor unit performance with negative leader actions than when the leader frequently did this ( $r = .18$ ). For female-led subordinates there was no correlation ( $r = .03$ ).

##### 5. Satisfaction with Summer Assignment

Tables 9 and 10 present the correlates of follower satisfaction with summer assignment in units led by males and females at CFT and CBT, respectively.

CFT. Generally, the measures included in our questionnaire to describe leader and unit actions were not strongly correlated with subordinates satisfaction with summer assignment. Only one of the 60 correlations in Table 9 exceeded .30. Only 17 of these correlations were as high as .20. Ignoring possible sex differences, the modest

correlations in Table 9 suggested that followers more satisfied with their summer assignment, relative to those who were less satisfied, reported that:

- downward communication was more effective
- leaders made greater use of positive forms of social power (referent, expert, reward)
- leader skill contributed more strongly to unit performance
- leaders rewarded good performance and responded constructively to poor performance
- leaders explained the rationale behind their direct commands

CBT. In general, our questionnaire measures of leader and group process were more strongly correlated to satisfaction with summer assignment for CBT respondents than for CFT. Nine of the 60 correlations in Table 10 exceeded .30. Twenty-six of the correlations were as high as .20. The pattern of leader and group actions associated with high levels of follower satisfaction with summer assignment were much the same as found for the CFT setting. Specifically, followers more satisfied with their summer assignment, relative to those less satisfied, reported that:

- downward communication was more effective
- leaders were more receptive to upward communication
- potential leader rewards and punishments were perceived as having greater valence
- leaders made greater use of positive forms of social power (referent, expert, information)
- leader hard work contributed more strongly to unit performance
- leaders rewards good performance

It is not unreasonable that leader actions should be a stronger correlate of subordinates satisfaction with assignment at CBT than at CFT. The cadet leaders at CBT play a much stronger, more direct role in actual cadet training than is the case at CFT. The CBT leadership cadre actually instructs the plebe cadets in military courtesies, Academy lore, and basic military skills. Relatively little training at CBT is done by regular Army personnel from either the officer or enlisted corps. By contrast, the duties of the leadership cadre at CFT are primarily administrative in nature. The CFT leaders are responsible for getting their platoons to the proper training sites at the correct time with the correct equipment. For the actual training in the various combat arms skills at CFT, regular Army enlisted and officer personnel serve as instructors.

Gender effects. Two variables showed significant differences in correlations with follower satisfaction with assignment for female-led and male-led subordinates in the CFT setting. Three variables yielded such effects in the CBT setting. In no case did the same variable yield significantly different correlations in both settings.

In the CFT setting, outcome of upward influence attempts was positively correlated to subordinate satisfaction with assignment in male-led groups ( $r = .13$ ), but negatively correlated in female-led groups ( $r = -.18$ ). Similarly, frequency of use of personal punishment as an influence strategy was negatively correlated to satisfaction with assignment in male-led groups ( $r = -.13$ ), but positively correlated in female-led groups ( $r = .10$ ). In both cases, the absolute magnitude of all these correlations is small. However, it is inter-

esting that in both cases the correlations were in the expected direction for male-led subordinates and in the opposite direction for female-led subordinates.

In the CBT setting, subordinate satisfaction with assignment was correlated significantly more strongly among female-led subordinates than among male-led subordinates for the three following measures of leadership process:

- compliance due to information power
- frequency of using direct statement with an accompanying appeal to expertise as an influence strategy
- frequency of using indirect statement as an influence strategy

Again we have results for female leaders that run counter to common-sense expectations. Generally, reliance on expertise or indirect requests have been viewed negatively by our West Point respondents. Yet, here we see female leaders being rated as more effective when they display such behaviors.

#### 6. Satisfaction with Peers

Tables 11 and 12 present the correlates of follower satisfaction with peers in units led by males and females at CFT and CBT, respectively.

CFT. Very few of the questionnaire measures showed any appreciable correlation with subordinate reports of satisfaction with peers at CFT. Only seven of the 60 correlations in Table 11 exceed .20, with only one of these in the .30's. Interestingly, all seven of the correlations achieving this level are for subordinates with female

leaders. In female-led groups at CFT, subordinates more satisfied with their peers, relative to less satisfied subordinates, reported:

- more effective downward communication
- less compliance to leader because of coercive power
- more frequent rewards by leader for good performance and less frequency punishment of poor performance
- more frequent constructive action by leader in response to poor performance
- less frequent use of personal punishment as a strategy for social influence

CBT. As was the case with CFT, few of the questionnaire measures correlated substantially with subordinate reports of satisfaction with peers at CBT. Only eight of the 60 correlations in Table 12 exceed .20, with only two in the .30's. As was the case for CBT, these few correlations achieving this magnitude were principally those involving female leaders (seven of the eight). In female-led groups at CFT, subordinates more satisfied with their peers, relative to those less satisfied subordinates, reported:

- greater compliance with leader because of expert, legitimate, and information powers
- stronger attributional beliefs regarding the contribution of subordinate skill and the leader's hard work to the performance of the unit
- more frequency leader rewards for good performance

The sole correlation achieving this magnitude in male-led groups showed that more satisfied subordinates reported stronger beliefs in the role that hard work by unit members contributed to the performance of the unit.

Gender effects. Despite the general trend for the correlations in Tables 11 and 12 to be stronger for female-led groups than for male-led groups, only two of the 60 pairs of correlations in these tables differ significantly from each other. In the CFT setting, the quality of downward communication was correlated with subordinate peer satisfaction .34 for female-led groups, but only .09 for male-led groups. In the CBT setting, the frequency of leader rewards for above average performance was correlated with subordinate peer satisfaction more strongly for female-led groups than for male-led groups ( $r = .32$  and  $.04$  respectively).

#### CONCLUSIONS

##### Gender Differences

Relatively few significant differences emerged from our comparison of the correlates of leader success for male-led and female-led subordinates. By correlating 30 questionnaire measures of leadership process with each of five success criteria in the two settings, we generated 300 correlations for subordinates with male leaders and 300 correlations for subordinates with female leaders. In testing the significance of the difference between 300 pairs of correlations, one would expect 15 significant differences by chance alone, with alpha = .05. Our results showed only 20 such differences. With the number of significant effects so close to that expected by chance, any interpretations must be offered with great caution. The general lack of consistency among results from one criterion score to another and from one setting to the other further reinforces the need for interpretational caution. However, one general pattern does seem worthy of comment.

The strongest differences between the correlations for male-led and female-led subordinates involved the leader effectiveness criterion. More than half (11 of 20) of the significant differences involved this one criterion. As we suggested when presenting these results, factors reflecting greater personal strength were correlated with leader effectiveness more strongly for male-led subordinates than for female-led subordinates. The clearest examples of this pattern involved bases of social power, contingent administration of rewards and punishments, and attributional judgments. Male leaders evaluated as being more effective were said to elicit more compliance on the basis of referent power, to reward excellence more frequently, punish poor performance less frequently, and to elicit attributions that leader skill and leader hard work contributed more greatly to unit performance. For female leaders, these relationships were significantly weaker. Furthermore, female leaders evaluated as being more favorable were said to elicit more compliance on the basis of the information known only to those in the leader role, and to rely more on requesting help from subordinates as a means of social influence. These two relationships were significantly weaker for male leaders.

This pattern of leader effectiveness correlates, especially as they pertain to social influence patterns for male and female leaders, merits additional attention. First, these results lend some support to Epstein's (1970) hypothesis that the use of referent power is more effective for a male than a female leader. Second, female effectiveness seems to be related to a base of power that has few sex role

stereotypes associated with it: informational power. Consequently, one may speculate that the path to gaining subordinate compliance for a female leader is not only different than a male's, but also an outgrowth of her ability to dole out pertinent pieces of information that are valued or required by followers.

Finally, females' effectiveness was also correlated with more frequently influencing subordinates by asking them to go along with a request as a way of helping the leader. This influenced strategy can be viewed positively or negatively. On the one hand, it could reflect the female leader's tendency to engage in a more participatory leadership style. On the other hand, repeated appeals for help have also been seen as a stereotypically female influence strategy reflecting dependency and submissiveness (Johnson, 1978).

Turning now to the attributional data, the results bear a strong resemblance to the sex bias in attributional judgments noted by Deaux (1976). She reported that dispositional factors such as skill or effort were seen as the cause of successful performance by males while situational factors such as luck or ease of task were attributed to be the cause of successful performance by females. The form of our analyses is different than usually employed in such studies; we have correlated perceived success and attributional judgments rather than manipulating success and examining attributional judgments as the dependent variable in an analysis of variance. However, at least a variant of the phenomena described by Deaux is also shown in our data. Strong internal attributions are made for the success of male leaders. For female leaders such attributions are

not made. In the present study, we do not find the expected gender bias in regard to the external attributions.

In weighing the meaning of these differences in the correlates of effective male and female leaders, it is important to recall that there were no significant mean differences in the rated effectiveness of male and female leaders. As we reported previously (Report 80-2, Adams, Rice, Instone and Prince, 1980), female leaders were actually rated as being somewhat more effective than male leaders (although the difference was not significant). Thus, even in the military training context of the present study, the traditional masculine approach is not the only path to leader effectiveness.

In sum, these results do suggest that male and female leaders travel somewhat different paths to effectiveness. Before one begins work on elaborating separate models of leader effectiveness for male and female styles of leadership, however, the results of the present study must be verified in other settings. The encouraging results from comparing the correlates of leader effectiveness for male and female leaders in the present study suggest that such research would be most worthwhile. However, it must be remembered that the similarities between correlates of effective male and female leaders may well outweigh the differences that we have discussed here.

While 11 correlates of leader effectiveness were significantly different for male and female leaders, 49 did not differ significantly. And for the other criteria of leader success, this pattern of generally similar results for male and female leaders was even more pronounced. Given such findings, it may be that separate theories of

male and female leadership are not really warranted. Rather, it may be more appropriate to develop specific corollary statements acknowledging the greater or lesser applicability of certain propositions to male and female leaders.

#### General Patterns

While the principal concern of the present study was on possible gender differences in the correlates of leader success, the patterns of correlates consistent across male and female leaders should not be ignored. Indeed, as mentioned immediately above, the similarities in such correlates were considerably more frequent than significant gender differences. More successful leaders, be they male or female, were described by their subordinates as communicating more effectively, relying more on personal bases of power, contributing more to the performance of the unit, rewarding good task performance, responding constructively to poor performance more frequently, and more frequently providing the rationale for directions while avoiding negative styles of social influence such as ingratiation, threats or personal punishment. These several different categories of variables correlating with perceived success of the leader deserve separate discussion.

Communication. Many organization and leadership theorists have pointed to the important role that communication plays in the relationship between leaders and followers. For the present study, we followed the model presented by Katz and Kahn (1978) to conceptualize the nature of upward and downward flow of communication. The scales that we developed required respondents to indicate how effective the flow of information was for the specific topics identified by Katz

and Kahn as being relevant for either upward or downward communication. The second downward communication scale required respondents to describe the quality of downward communication in terms of several qualitative dimensions such as timeliness, relevance and amount of information received from the leader. For all three of these communication scales, the results were the same. Substantial positive correlations showed that leaders described by their subordinates as being more successful were also described as communicating downward more effectively and as being more receptive to upward communication. This pattern held true for both male and female leaders in both settings.

Bases of power. Our analyses of the bases of social power also relied heavily on Katz and Kahn (1978). They discuss leadership as a form of "incremental" influence; i.e., social influence above the influence provided by the formal role. Using the bases of power taxonomy developed by French and Raven (1960), incremental influence (or leadership) involves the use of referent and expert power. The other bases of power are far less personal and can be formally endowed on the leader by the organization. Referent and expert power cannot be so endowed by the formal organization; these personal forms of power are endowed by subordinates and the leader must earn respect in the eyes of subordinates before they are able to wield such power.

Student (1968) reported that these personal bases of power were stronger correlates of several different measures of leadership effectiveness than were the formally endowed powers such as legitimacy, coercion, and reward. Student's measures of social power were

quite similar to those used in the present study. His measures of leadership effectiveness were objective standards of performance by work units in an appliance factory, e.g., scrap costs, absenteeism, quality ratings, etc.

Our results concerning bases of power nicely replicate and extend the earlier work by Student (1968). In terms of replication, we also found the highest correlations with measures of leader success to be those involving the personal bases of power. Depending on the particular criterion measure, these correlations were sometimes as high as the .50's. By contrast, the correlations between leader success and formal bases of power were seldom as high as even .20. In terms of extending Student's findings, we can point to setting and methodological factors that represent important differences between Student's (1968) original study and the present research. His study involved long term civilian work groups with primarily middle-aged male foremen in a factory production setting. The present research involved short-term military units with both men and women unit leaders in field training settings. Furthermore, Student's study used objective measures of unit performance as the criteria of leader success while the present study used subjective reports from subordinates as the criteria of leader success. Despite these many important differences between the two studies, the results are almost identical. In terms of both policy and research, two of these dimensions for generalization of Student's results stand out as being most important: the general similarity of results with both male and female leaders and the applicability in military as well as civilian settings.

The work of Rosabeth Kanter (1977) deserves at least brief mention with regard to power and gender. She has suggested that women act as they do in organizations not because they are women, but because they are people in relatively powerless positions. She proposes that men who are powerless show similar kinds of behavior patterns. Considerable research, including the classic study by Pelz (1952), shows that male organizational members with little power do behave in the petty, bureaucratic fashion often used to describe female behavior (see also the studies of Graen and his associates in their investigations of the Vertical Dyad Linkage Model: Cashman, Dansereau, Graen and Haga, 1976; Graen, 1976). Kanter suggests that women are more often found in low power positions than are men.

Our prior analyses of the present data showed that male and female leaders were described as generally having equal amounts of personal and positional powers in their leadership roles at CBT and CFT. The present analyses further suggests that both male and female leaders are generally more successful when relying on personal powers than when relying on positional powers. However, as discussed earlier, there was evidence that males make greater use of referent power as the road to success, and that females rely more on informational power as the road to success when ratings of leader effectiveness served as the criterion of leader success. While the power ascribed to the formal role may be the basic cause of observed differences in the behavior of men and women in organizations, as Kanter (1977) suggests, for at least some measures of leader success the capacity

to use certain powers as a means of achieving successful leadership outcomes may be six-linked.

Regarding the difference between civilian and military settings, a brief commentary will suffice. Stereotypic views of the military may suggest that formal powers of the leader are so strong as to negate the importance of the leader's personal powers. Those familiar with the everyday functioning of military units recognize that such stereotypes bear little resemblance to reality. As suggested by the present data, the personal powers of the leader are also important in military leadership. As with Student's (1968) industrial foreman, our unit leaders of military cadets were more successful when followers complied with their orders because of the leader's expertise and referent qualities. This similarity between leadership patterns in civilian and military settings should not be taken for granted. In a prior study, Kipnis and Cosentino (1969) found that when faced with a problem subordinates, Navy leaders tended to use formal role powers while industrial supervisors tended to rely on personal powers.

As a final note on the social power results, it is useful to discuss the criterion measures of leader success. At the psychological level of the subordinates describing why they comply with the demands of their leader, the difference between Student's (1968) study and the present one may not be as great as it first appears. One can readily argue that the results of the present study reflect primarily the implicit theories of leadership held by subordinates.

The subordinates first evaluated the performance of the leader and then described their reasons for complying with his/her attempts to influence them. The resulting correlations may not be an unbiased picture of leader process as it relates to success as a leader. Rather, these correlations may reflect respondents' beliefs about such relationships. The Student study is also open to such an interpretation. Subordinates in the factory setting presumably knew how well the units with different foremen performed relative to other units. In describing their reasons for compliance with their foreman, these subordinates may also have been influenced by their implicit theories about the type of leadership needed for successful units.

Attributions. Our principal concern regarding attributional judgments by subordinates was on the strength of such beliefs in male-led and female-led groups. Our previous report indicated that few differences related to leader gender achieved significance (Adams, Rice and Instone, 1980). The analyses conducted for the present report revealed an unexpected phenomena regarding such judgments. Reports of the strength with which the leader's skill and effort impacted unit performance were positively correlated with several of our different measures of leader success. Such a result indicates that leaders were seen as more responsible for successful units and less responsible for unsuccessful units. This pattern would not be surprising in self-reports by leaders. A well-documented phenomena from attribution research is the tendency for individuals to credit themselves for success and attribute failure to the actions

of others. However, such a pattern of results for subordinate responses actually counters the usual ego-defensive biases. Had such biases been in operation, we would have expected positive correlations between the ratings of the unit members' contribution to unit performance (especially when correlated with the unit effectiveness criterion).

Further research relying on a wide variety of settings and subject populations is needed to assess the generality of the bias to attribute success to the group leader. A prior study in this program of research did use similar measures and achieved similar results. In a laboratory study, Rice, Bender and Bitters (1980) administered a single item measure of perceived task success following each of two 30-minute group tasks. They also report positive correlations between perceived success and attributions to the leader's effort and ability. However, they report as strong, or even stronger, positive correlations between perceived success and attributions to the followers' effort and ability.

The reasons for this tendency to attribute success but not failure to the leader is not clear. However, one possibility is that attributional judgments have a stronger evaluative component than usually thought. When indicating that the leader contributed greatly to the unit performance, respondents may be making a very favorable statement about the leader. In responding to the attribution questions, followers as a group may forget that leaders can contribute just as greatly to the failure of a group as to the success of the group. In both the Rice, Bender and Vitters (1980) study, and in

the present study (Adams, Rice, Instone and Prince, 1980), we have found strong correlations between leader-based attributions and more directly evaluative judgments about the leader. Such results support the contention that attributions may be evaluative. This interpretation is also supported in a general way by Zajonc's (1980) argument that affect may often precede cognitions.

The speculative nature of the interpretation of the bias to attribute group success to the leader cannot be over-emphasized. Following on the recent work by Calder (1977), we are just beginning to learn about attributional judgments in the context of leadership. Hopefully, future research will examine more carefully the phenomenon discovered in the present study.

Motivation. Our examination of follower motivation was based on the path goal theory of leadership (House and Mitchell, 1974). This theory proposes that a major function of the leader is to motivate his/her subordinates. Relying on Vroom's (1964) expectancy theory of motivation, the path-goal theory focuses on the valence, expectancies, and instrumentalities. We did not attempt to provide a thorough test of this theoretical position. However, we did include measures of valence and instrumentality. The valence of different rewards and punishments that might be provided by a cadet leader was not correlated strongly with success of the leader. However, the perceived link between unit performance and the administration of rewards and punishments was related to leader success. More successful leaders were described as rewarding good performance by the unit and responding constructively to poor performance by the unit. In

73

the vernacular of the Academy, such a use of rewards and punishments is termed "positive leadership." Positive leadership is seen as an important alternative to the traditional philosophy of cadet training in which stress is created by a situation where good performance receives no responses and punishment is heaped on those who perform poorly. At least in the present context, the use of positive leadership techniques is associated with favorable evaluations of the leaders.

Strategies of social influence. Our results concerning the methods used by male and female leaders to influence their subordinates can also be interpreted in terms of the ideal of positive leadership. The cadet leaders evaluated as being most effective were said to make greater use of direct statements accompanied by the reasons behind their requests. The more effective leaders made less use of more aversive and/or less direct strategies of influence in which the followers were not informed of the rationale underlying the request.

#### Limitations

The most serious limitation of the present study is that measures of both leader success and descriptions of leader-follower process come from subordinates self-reports. This procedure introduces personal bias and method variance as alternative explanations for the observed correlations between process measures and indicators of leader success. As discussed with regard to the social power findings, the obtained pattern of correlations may reflect nothing more than the implicit theories of leadership held by those responding to the questionnaire.

The implicit leadership theory interpretation is not limited to the social power results, but applies equally well to the other classes of dependent variables that we have correlated with measures of leadership success. Positive leadership, discussed above, is a good example of the form an implicit theory of leadership might take. Assume that cadets believed in the proposition that it is good for leaders to reinforce appropriate behavior and to minimize punishing inappropriate behavior. When faced with acts of positive leadership, they might then judge the leader to be a success (since the leader matched up to the ideal prescribed by the theory). Conversely, when viewing someone they feel is doing a good job as leader, believers in the positive leadership theory might perceive the leader's action in a way that conforms to the theory. If both forms of influence are operating, as is likely to be the case, substantial correlations of the type reported here could be generated.

The problem of implicit theories of leadership as an alternative interpretation is especially salient for the few significant gender differences in the correlates of leader effectiveness. As discussed above, these differences match quite well the pattern that would be suggested by widely held stereotypes about the qualities of men and women. Our results may well reflect implicit theories of sex differences in leader effectiveness.

The only way to eliminate implicit theories of leadership as an alternative explanation to the correlations of the type reported here is to alter the methods of data collection. Objective rather than subjective reports of leadership process must be collected.

Furthermore, such data must be matched with objective measures of leader success. As noted in the discussion of Student's (1968) research, the implicit theory interpretation can be introduced when either the process or success data are from a subjective source.

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TABLE 1  
INTERCORRELATIONS AMONG CRITERION MEASURES AT CFT

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
1. Leader effectiveness	---	.54	.50	.14	.15
2. Satisfaction with leader	.57	---	.42	.37	.28
3. Unit effectiveness	.47	.34	---	.20	.24
4. Satisfaction with summer assignment	.18	.41	.22	---	.13
5. Satisfaction with peers	.08	.16	.23	.24	---

NOTE: Correlations above the diagonal are for female leaders (minimum N = 108) and correlations below the diagonal are for male leaders (minimum N = 676).

TABLE 2  
INTERCORRELATIONS AMONG CRITERION MEASURES AT CBT

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
1. Leader effectiveness	---	.43	.24	.27	.03
2. Satisfaction with leader	.50	---	.39	.47	.43
3. Unit effectiveness	.43	.31	---	.15	.26
4. Satisfaction with summer assignment	.24	.53	.21	---	.16
5. Satisfaction with peers	.09	.22	.24	.29	---

NOTE: Correlations above the diagonal are for female leaders (minimum N - 66) and correlations below the diagonal are for male leaders (minimum N - 713).

TABLE 3

CORRELATES OF SUBORDINATE REPORTS OF LEADER EFFECTIVENESS  
FOR MALE- AND FEMALE-LED UNITS AT CFT

	Male led	n	Female led	n	Signi- ficance
Downward Communication Content	.51	548	.54	76	
Downward Communication Quality	.59	718	.55	113	
Upward Communication	.49	714	.34	113	
Valence of Leader Actions	.24	709	.08	109	
Outcome of Upward Influence	.05	469	-.24	80	2.36*
<b>Bases of Social Power</b>					
Referent	.57	719	.35	113	2.73**
Expert	.48	723	.38	113	
Reward	.16	721	.19	111	
Coercion	-.16	719	-.01	114	
Legitimate	.07	720	-.04	113	
Information	.12	722	.26	112	
<b>Casual Attributions</b>					
Leader Skill	-.50	698	-.27	111	2.60**
Unit Skill	-.02	687	.03	111	
Leader Work	-.48	699	-.27	113	2.35*
Unit Work	-.01	698	-.00	109	
Good Luck	.00	554	-.18	85	
Bad Luck	.04	537	-.04	84	

TABLE 3 (continued)

	Male led	n	Female led	n	Signi- ficance
<b>Contingent Reward/Punishment</b>					
Excellent Performance - Rewarded	.46	695	.37	110	
Poor Performance - Negative Acts	-.24	689	-.02	108	2.10*
Above Average Performance - Rewarded	.35	686	.40	109	
Below Average Performance - Constructive Acts	.24	667	.36	106	
<b>Influence Strategies</b>					
Direct Without Rationale	-.32	698	-.28	109	
Direct Expertise	-.24	672	-.04	104	
Direct With Rationale	.44	687	.36	110	
Indirect	-.10	641	-.06	101	
Direct Threats	-.34	693	-.25	105	
Ingratiation	-.21	660	.08	99	2.71**
Personal Punishment	-.31	638	-.04	106	2.64**
Personal Reward	.13	652	.16	102	
Helplessness	-.05	670	-.08	107	

\* p&lt;.05

\*\* p&lt;.01

With n = 60,  $r \geq .25$  is significant at p<.05 and  $r \geq .32$  is significant at p<.01.

With n = 80,  $r \geq .22$  is significant at p<.05 and  $r \geq .28$  is significant at p<.01.

With n = 500,  $r \geq .09$  is significant at p<.05 and  $r \geq .12$  is significant at p<.01.

TABLE 4

CORRELATES OF SUBORDINATE REPORTS OF LEADER EFFECTIVENESS  
FOR MALE- AND FEMALE-LED UNITS AT CBT

	Male led	n	Female led	n	Signifi- cance
Downward Communication Content	.48	625	.27	57	
Downward Communication Quality	.47	718	.34	65	
Upward Communication	.34	718	.16	66	
Valence of Leader Actions	.16	713	-.03	66	
Outcome of Upward Influence	.09	171	-.16	28	
<b>Bases of Social Power</b>					
Referent	.50	718	.32	66	
Expert	.37	717	.36	66	
Reward	.05	716	-.04	66	
Coercion	-.12	714	-.06	65	
Legitimate	-.03	717	-.04	66	
Information	.07	715	.45	66	3.13**
<b>Casual Attributions</b>					
Leader Skill	-.52	686	-.26	66	
Unit Skill	-.08	608	-.00	60	
Leader Work	-.43	696	-.22	64	
Unit Work	-.05	660	.05	62	
Good Luck	-.03	528	-.18	53	
Bad Luck	.04	516	-.14	51	

TABLE 4 (continued)

	Male led	n	Female led	n	Signifi- cance
<b>Contingent Reward/Punishment</b>					
Excellent Performance-Rewarded	.37	696	.10	66	
Poor Performance-Negative Acts	-.13	698	-.15	64	
Above Average Performance- Rewarded	.33	699	.23	65	
Below Average Performance- Constructive Acts	.29	690	.33	60	
<b>Influence Strategies</b>					
Direct Without Rationale	-.20	682	-.05	60	
Direct Expertise	-.21	660	.03	63	
Direct With Rationale	.22	699	.33	64	
Indirect	-.11	627	.11	63	
Direct Threats	-.23	678	-.18	63	
Ingratiation	-.12	632	.02	64	
Personal Punishment	-.21	657	-.02	63	
Personal Reward	-.08	632	.09	60	
Helplessness	-.08	580	.24	58	2.26*

\* p<.05  
\*\* p<.01

With n = 60, r $\geq$ .22 is significant at p<.05 and r $\geq$ .32 is significant at p<.01.

With n = 80, r $\geq$ .22 is significant at p<.05 and r $\geq$ .28 is significant at p<.01.

With n = 700, r $\geq$ .09 is significant at p<.05 and r $\geq$ .12 is significant at p<.01.

TABLE 5

CORRELATES OF SUBORDINATE REPORTS OF SATISFACTION  
WITH THE LEADER FOR MALE- AND FEMALE-LED UNITS AT CFT

	Male led	n	Female led	n	Signifi- cance
Downward Communication Content	.56	548	.48	76	
Downward Communication Quality	.61	718	.71	113	
Upward Communication	.60	714	.68	113	
Valence of Leader Action	.24	809	.14	109	
Outcome of Upward Influence	.04	469	-.14	80	
<b>Bases of Social Power</b>					
Referent	.60	719	.55	113	
Expert	.46	723	.53	113	
Reward	.17	721	.25	111	
Coercion	-.17	719	-.11	114	
Legitimate	.09	720	-.10	113	
Information	.18	722	.21	112	
<b>Casual Attributions</b>					
Leader Skill	-.47	698	-.44	111	
Unit Skill	-.02	687	-.04	111	
Leader Work	-.48	699	-.53	113	
Unit Work	-.07	698	-.07	109	
Good Luck	.03	554	.10	85	
Bad Luck	.04	537	.01	84	

TABLE 5 (continued)

	<u>Male led</u>	<u>n</u>	<u>Female led</u>	<u>n</u>	<u>Signi- ficance</u>
<b>Contingent Reward/Punishment</b>					
Excellent Performance-Rewarded	.52	695	.51	110	
Poor Performance-Negative Acts	-.29	689	-.11	108	
Above Average Performance- Rewarded	.41	686	.39	109	
Below Average Performance- Constructive Acts	.39	667	.34	106	
<b>Influence Strategies</b>					
Direct Without Rationale	-.40	698	-.50	109	
Direct Expertise	-.26	672	-.17	104	
Direct With Rationale	.50	687	.39	110	
Indirect	-.10	641	-.09	101	
Direct Threats	-.35	693	-.39	105	
Ingratiation	-.22	660	-.19	99	
Personal Punishment	-.32	638	-.16	106	
Personal Reward	.11	652	.23	102	
Helplessness	-.03	670	-.02	107	

\*  $p < .05$ \*\*  $p < .01$ 

With  $n = 60$ ,  $r \geq .25$  is significant at  $p < .05$  and  $r \geq .32$  is significant at  $p < .01$ .

With  $n = 80$ ,  $r \geq .22$  is significant at  $p < .05$  and  $r \geq .28$  is significant at  $p < .01$ .

With  $n = 500$ ,  $r \geq .09$  is significant at  $p < .05$  and  $r \geq .12$  is significant at  $p < .01$ .

TABLE 6

CORRELATES OF SUBORDINATES REPORTS OF SATISFACTION  
WITH THE LEADER FOR MALE- AND FEMALE-LED UNITS AT CBT

	Male led	n	Female led	n	Signifi- cance
Downward Communication Content	.51	623	.62	58	
Downward Communication Quality	.52	724	.62	67	
Upward Communication	.53	723	.47	67	
Valence of Leader Actions	.20	716	.04	67	
Outcome of Upward Influence	.18	178	.04	28	
<b>Bases of Social Power</b>					
Referent	.51	722	.38	67	
Expert	.43	720	.33	67	
Reward	.09	719	.16	67	
Coercion	-.14	718	-.07	66	
Legitimate	.11	722	-.00	67	
Information	.17	719	.42	67	
<b>Casual Attributions</b>					
Leader Skill	-.36	696	-.24	67	
Unit Skill	-.14	615	-.10	61	
Leader Work	-.35	700	-.32	65	
Unit Work	-.07	667	-.16	63	
Good Luck	-.04	529	-.21	54	
Bad Luck	.06	520	.01	52	

TABLE 6 (continued)

	Male led	n	Female led	n	Signi- ficance
<b>Contingent Reward/Punishment</b>					
Excellent Performance-Rewarded	.45	700	.41	67	
Poor Performance-Negative Acts	-.20	702	-.33	65	
Above Average Performance- Rewarded	.35	706	.31	66	
Below Average Performance- Constructive Acts	.39	695	.41	61	
<b>Influence Strategies</b>					
Direct Without Rationale	-.32	688	-.29	61	
Direct Expertise	-.19	664	-.04	64	
Direct With Rationale	.29	704	.34	65	
Indirect	-.04	635	.14	64	
Direct Threats	-.26	683	-.28	64	
Ingratiation	-.05	641	-.09	65	
Personal Punishment	-.23	664	-.08	64	
Personal Reward	-.04	639	-.05	61	
Helplessness	-.01	584	-.01	59	

\*  $p < .05$ \*\*  $p < .01$ With  $n = 60$ ,  $r \geq .25$  is significant at  $p < .05$  and  $r \geq .32$  is significantWith  $n = 60$ ,  $r \geq .22$  is significant at  $p < .05$  and  $r \geq .28$  is significant  
at  $p < .01$ .With  $n = 100$ ,  $r \geq .09$  is significant at  $p < .05$  and  $r \geq .12$  is significant  
at  $p < .01$ .

TABLE 7

**CORRELATES OF SUBORDINATE REPORTS OF UNIT EFFECTIVENESS  
FOR MALE- AND FEMALE-LED UNITS AT CFT**

	<u>Male led</u>	<u>n</u>	<u>Female led</u>	<u>n</u>	<u>Signifi- cance</u>
Downward Communication Content	.36	548	.43	76	
Downward Communication Quality	.39	718	.49	113	
Upward Communication	.28	714	.31	113	
Valence of Leader Actions	.13	709	.11	109	
Outcome of Upward Influence	.11	469	.18	80	
<b>Bases of Social Power</b>					
Referent	.31	719	.26	113	
Expert	.26	723	.28	113	
Reward	.10	721	.14	111	
Coercion	-.13	719	-.12	114	
Legitimate	.05	720	-.08	113	
Information	.09	722	.20	112	
<b>Casual Attributions</b>					
Leader Skill	-.24	698	-.20	111	
Unit Skill	-.05	687	-.13	111	
Leader Work	-.31	699	-.23	113	
Unit Work	-.14	698	-.13	109	
Good Luck	.05	554	.10	85	
bad Luck	.07	537	.14	84	

TABLE 7 (continued)

	Male led	n	Female led	n	Signi- ficance
<b>Contingent Reward/Punishment</b>					
Excellent Performance-Rewarded	.33	695	.37	110	
Poor Performance-Negative Acts	-.18	689	.03	108	2.00*
Above Average Performance- Rewarded	.30	686	.33	109	
Below Average Performance- Constructive Acts	.24	667	.22	106	
<b>Influence Strategies</b>					
Direct Without Rationale	-.20	698	-.23	109	
Direct Expertise	-.15	672	-.02	104	
Direct With Rationale	.27	687	.20	110	
Indirect	-.08	64	-.06	101	
Direct Threats	-.21	693	-.17	105	
Ingratiation	-.14	660	.01	99	
Personal Punishment	-.22	638	-.04	106	
Personal Reward	.09	652	.16	102	
Helplessness	-.08	670	-.13	107	

\*  $p < .05$ \*\*  $p < .01$ 

With  $n = 60$ ,  $r \geq .25$  is significant at  $p < .05$  and  $r \geq .32$  is significant at  $p < .01$ .

With  $n = 80$ ,  $r \geq .22$  is significant at  $p < .05$  and  $r \geq .28$  is significant at  $p < .01$ .

With  $n = 500$ ,  $r \geq .09$  is significant at  $p < .05$  and  $r \geq .12$  is significant at  $p < .01$ .

TABLE 8

**CORRELATES OF SUBORDINATES REPORTS OF UNIT EFFECTIVENESS  
FOR MALE- AND FEMALE-LED UNITS AT CBT**

	<u>Male led</u>	<u>n</u>	<u>Female led</u>	<u>n</u>	<u>Signi- ficance</u>
Downward Communication Content	.27	627	.43	58	
Downward Communication Quality	.31	727	.21	66	
Upward Communication	.24	727	.21	67	
Valence of Leader Actions	.14	722	.10	67	
Outcome of Upward Influence	.11	176	.09	28	
<b>Bases of Social Power</b>					
Referent	.26	718	.31	67	
Expert	.18	726	.13	67	
Reward	.08	725	-.03	67	
Coercion	-.07	723	-.04	66	
Legitimate	.02	727	.11	67	
Information	.06	725	.23	67	
<b>Casual Attributions</b>					
Leader Skill	-.21	696	-.19	67	
Unit Skill	-.19	617	-.20	61	
Leader Work	-.21	703	-.26	63	
Unit Work	-.18	671	-.21	63	
Good Luck	.02	535	-.16	54	
Bad Luck	.05	525	-.00	52	

TABLE 8 (continued)

	Male led	n	Female led	n	Signi- ficance
<b>Contingent Reward/Punishment</b>					
Excellent Performance-Rewarded	.23	706	.29	67	
Poor Performance-Negative Acts	-.04	709	-.05	65	
Above Average Performance- Rewarded	.20	709	.16	66	
Below Average Performance- Constructive Acts	.12	701	.17	61	
<b>Influence Strategies</b>					
Direct Without Rationale	-.14	693	.07	61	
Direct Expertise	-.11	668	-.01	64	
Direct With Rationale	.11	709	.07	65	
Indirect	-.03	638	.20	64	
Direct Threats	-.09	688	-.19	64	
Ingratiation	-.02	643	.00	65	
Personal Punishment	-.08	667	.04	64	
Personal Reward	-.04	641	-.02	61	
Helplessness	-.03	585	.14	59	

\* p&lt;.05

\*\* p&lt;.01

With n = 60,  $r \geq .25$  is significant at p<.05 and  $r \geq .32$  is significant at p<.01.

With n = 80,  $r \geq .22$  is significant at p<.05 and  $r \geq .28$  is significant at p<.01.

With n = 500,  $r \geq .09$  is significant at p<.05 and  $r \geq .12$  is significant at p<.01.

TABLE 9

CORRELATES OF SUBORDINATE REPORTS OF  
SATISFACTION WITH THEIR ASSIGNMENT  
FOR MALE- AND FEMALE-LED UNITS AT CFT

	Male led	n	Female led	n	Signifi- cance
Downward Communication Content	.28	548	.25	76	
Downward Communication Quality	.20	716	.21	113	
Upward Communication	.19	714	.06	113	
Valence of Leader Actions	.16	709	.12	109	
Outcome of Upward Influence	.13	469	-.18	80	2.52*
<b>Bases of Social Power</b>					
Referent	.23	719	.24	113	
Expert	.28	723	.32	113	
Reward	.14	721	.23	111	
Coercion	-.08	719	-.06	114	
Legitimate	.06	720	.03	113	
Information	.14	722	.18	112	
<b>Casual Attributions</b>					
Leader Skill	-.20	698	-.23	111	
Unit Skill	-.11	687	-.13	111	
Leader Work	-.19	699	-.17	113	
Unit Work	-.12	698	-.03	109	
Good Luck	.03	554	-.17	85	
Bad Luck	.09	537	-.02	84	

TABLE 9 (continued)

	Male led	n	Female led	n	Signi- ficance
<b>Contingent Reward/Punishment</b>					
Excellent Performance-Rewarded	.27	695	.23	110	
Poor Performance-Negative Acts	-.07	689	-.15	108	
Above Average Performance- Rewarded	.22	686	.15	109	
Below Average Performance- Constructive Acts	.23	667	.26	106	
<b>Influence Strategies</b>					
Direct Without Rationale	-.15	698	-.05	109	
Direct Expertise	-.08	672	.03	104	
Direct With Rationale	.24	687	.13	110	
Indirect	-.04	641	.05	101	
Direct Threats	-.08	643	-.07	105	
Ingratiation	-.07	660	.01	99	
Personal Punishment	-.13	638	.10	106	2.17*
Personal Reward	.07	652	.01	102	
Helplessness	-.00	670	-.06	107	

\* p&lt;.05

\*\* p&lt;.01

With n = 60,  $r \geq .25$  is significant at  $p < .05$  and  $r \geq .32$  is significant at  $p < .01$ .

With n = 80,  $r \geq .22$  is significant at  $p < .05$  and  $r \geq .28$  is significant at  $p < .01$ .

With n = 500,  $r \geq .09$  is significant at  $p < .05$  and  $r \geq .12$  is significant at  $p < .01$ .

TABLE 10

CORRELATES OF SUBORDINATE REPORTS OF  
SATISFACTION WITH THEIR ASSIGNMENT  
FOR MALE- AND FEMALE-LED UNITS AT CFT

	Male led	n	Female led	n	Signifi- cance
Downward Communication Content	.32	630	.35	58	
Downward Communication Quality	.24	731	.22	66	
Upward Communication	.27	734	.32	67	
Valence of Leader Actions	.23	727	.24	67	
Outcome of Upward Influence	.08	179	.10	28	
<b>Bases of Social Power</b>					
Referent	.31	731	.13	67	
Expert	.31	731	.31	67	
Reward	.09	729	.19	67	
Coercion	-.08	726	-.01	66	
Legitimate	.11	730	.27	67	
Information	.18	729	.55	67	3.41**
<b>Casual Attributions</b>					
Leader Skill	-.23	703	-.01	67	
Unit Skill	-.13	622	-.21	61	
Leader Work	-.20	709	-.20	65	
Unit Work	-.15	676	-.12	63	
Good Luck	-.04	537	-.18	54	
Bad Luck	.05	526	.01	52	

TABLE 10 (continued)

	Male led	n	Female led	n	Signi- ficance
<b>Contingent Reward/Punishment</b>					
Excellent Performance-Rewarded	.27	708	.24	67	
Poor Performance-Negative Acts	-.06	712	-.10	65	
Above Average Performance- Rewarded	.21	713	.34	66	
Below Average Performance- Constructive Acts	.19	704	.12	61	
<b>Influence Strategies</b>					
Direct Without Rationale	-.14	696	.05	61	
Direct Expertise	-.05	671	.32	64	2.84**
Direct With Rationale	.16	714	.20	65	
Indirect	.02	641	.29	64	2.09*
Direct Threats	-.12	692	.05	64	
Ingratiation	.02	648	-.03	65	
Personal Punishment	-.06	671	.04	64	
Personal Reward	.00	647	.08	61	
Helplessness	.00	591	.15	59	

\* p&lt;.05

\*\* p&lt;.01

With n = 60,  $r \geq .25$  is significant at p<.05 and  $r \geq .32$  is significant at p<.01.

With n = 80,  $r \geq .22$  is significant at p<.05 and  $r \geq .28$  is significant at p<.01.

With n = 500,  $r \geq .09$  is significant at p<.05 and  $r \geq .12$  is significant at p<.01.

TABLE 11

CORRELATES OF SUBORDINATE SATISFACTION WITH THEIR PEERS  
FOR MALE- AND FEMALE-LED UNITS AT CFT

	Male led	n	Female led	n	Signifi- cance
Downward Communication Content	.09	548	.24	76	
Downward Communication Quality	.09	718	.34	113	2.54*
Upward Communication	.09	714	.17	113	
Valence of Leader Actions	.14	709	.06	109	
Outcome of Upward Influence	.18	469	.13	80	
<b>Bases of Social Power</b>					
Referent	.06	719	.15	113	
Expert	.02	723	.09	113	
Reward	.05	721	.08	111	
Coercion	-.13	719	-.26	114	
Legitimate	.05	720	-.03	113	
Information	-.06	722	.05	112	
<b>Casual Attributions</b>					
Leader Skill	.02	698	-.05	111	
Unit Skill	-.15	687	-.02	111	
Leader Work	-.01	699	-.10	113	
Unit Work	-.18	698	-.15	109	
Good Luck	.06	554	.03	85	
Bad Luck	.09	537	.01	84	

TABLE 11 (continued)

	<u>Male led</u>	<u>n</u>	<u>Female led</u>	<u>n</u>	<u>Signi- ficance</u>
<b>Contingent Reward/Punishment</b>					
Excellent Performance-Rewarded	.13	695	.28	110	
Poor Performance-Negative Acts	-.10	689	-.25	108	
Above Average Performance- Rewarded	.11	686	.18	109	
Below Average Performance- Constructive Acts	.13	667	.21	106	
<b>Influence Strategies</b>					
Direct Without Rationale	-.05	698	-.01	109	
Direct Expertise	-.05	672	.06	104	
Direct With Rationale	.07	687	.15	110	
Indirect	-.04	641	-.01	101	
Direct Threats	-.06	693	-.00	105	
Ingratiation	-.04	660	.08	99	
Personal Punishment	-.09	638	-.20	106	
Personal Reward	-.02	652	.09	102	
Helplessness	.05	670	.01	107	

\*  $p < .05$ \*\*  $p < .01$ 

With  $n = 60$ ,  $r \geq .25$  is significant at  $p < .05$  and  $r \geq .32$  is significant at  $p < .01$ .

With  $n = 80$ ,  $r \geq .22$  is significant at  $p < .05$  and  $r \geq .28$  is significant at  $p < .01$ .

With  $n = 500$ ,  $r \geq .09$  is significant at  $p < .05$  and  $r \geq .12$  is significant at  $p < .01$ .

TABLE 12

CORRELATES OF SUBORDINATE SATISFACTION WITH THEIR PEERS  
FOR MALE- AND FEMALE-LED UNITS AT CBT

	Male led	n	Female led	n	Signi- ficance
Downward Communication Content	.19	632	.19	58	
Downward Communication Quality	.09	735	.11	66	
Upward Communication	.12	735	.05	67	
Valence of Leader Actions	.16	730	.16	67	
Outcome of Upward Influence	.10	180	.02	28	
<b>Bases of Social Power</b>					
Referent	.07	735	.17	67	
Expert	.12	734	.24	67	
Reward	.02	733	.07	67	
Coercion	.00	731	-.04	66	
Legitimate	.07	734	.24	67	
Informati- on	.09	733	.23	67	
<b>Casual Attributions</b>					
Leader Skill	-.11	706	.01	67	
Unit Skill	-.15	625	-.31	61	
Leader Work	-.09	712	-.21	65	
Unit Work	-.22	679	-.14	63	
Good Luck	.01	540	-.14	54	
Bad Luck	.06	530	.14	52	

TABLE 12 (continued)

	Male led	n	Female led	n	Signi- ficance
<b>Contingent Reward/Punishment</b>					
Excellent Performance-Rewarded	.09	713	.29	67	
Poor Performance-Negative Acts	.01	716	-.13	65	
Above Average Performance- Rewarded	.04	716	.32	66	2.23*
Below Average Performance- Constructive Acts	.03	708	.13	61	
<b>Influence Strategies</b>					
Direct Without Rationale	-.08	701	.12	61	
Direct Expertise	-.08	676	.18	64	2.00*
Direct With Rationale	.06	718	.04	65	
Indirect	-.01	645	.03	64	
Direct Threats	-.02	696	.09	64	
Ingratiation	.01	651	-.06	65	
Personal Punishment	-.08	675	.06	64	
Personal Reward	-.04	650	.03	61	
Helplessness	-.08	595	.08	59	

\* p&lt;.05

\*\* p&lt;.01

With n = 60,  $r \geq .25$  is significant at p<.05 and  $r \geq .32$  is significant at p<.01.

With n = 80,  $r \geq .22$  is significant at p<.05 and  $r \geq .28$  is significant at p<.01.

With n = 500,  $r \geq .09$  is significant at p<.05 and  $r \geq .12$  is significant at p<.01.